Note remarks

: VOL 10,0 y1 Test sheet Edition : 02.10.89

Replaces

Test oil : ISO-4113

Combination no. : 0 401 846 903

Injection pump

Pump designation: PE6P110A320RS3080-5

EP type number : 0 411 816 767

Governor

Governor design. : RQV250...950PA921-19

Governer no. : 0 421 813 802

Customer-spec. information

: VOLVO-TRUCK Customer

: TD102FM Engine

1st version kW : 235.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp., C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 : (2.95...3.15) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 13.20...13.30

Del.guantity cm3/: 19.6...19.8

100 s: (19.4...20.0)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 250.0 2nd speed Rack travel in mm: 3.7...3.9

Del.quantity cm3/: 1.2...1.6

100 s: (0.9...1.9) cm3 : 0.3 Spread

100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 1.00...1.40 travel mm

rpm : 350 2nd speed

travel mm : 2.20...2.80

rpm : 750 3rd speed

: 6.30...6.70 travel mm

rpm : 995 4th speed

: 8.20...8.40 travel mm

5th speed rpm : 1060 : 9.30...9.70

travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1000

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 196.0...198.0 1000 : (194.0...200.0)

cm3: 4.00 Spread

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 61...69

Testing:

1st rack travel in: 12.20 rpm : 990...1000 Speed

2nd rack travel in: 4.00

Speed rpm : 1050...1080 4th rack travel in: 1250 Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 4...12

Testing:

Speed rpm : 100 Minimum rack trave: 5.30 Speed rpm : 250 rpm

Rack travel in mm : 3.70...3.90

CONSTANT REGULATION

rpm : 250...360 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 900 Pressure

: 13.20...13.30 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.90...10.10

2nd pressure hPa : 90

Rack travel in m: 10.20...10.30

3rd pressure hPa : 680

Rack travel in m: 12.80...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700 Del.quantity cm3/ : 134.5...136.5 1000 s: (131.5...139.5) **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 12.20

rpm : 990...1000 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 160.0...190.0 1000 s: (156.0...194.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm

Rack travel in mm : 3.70...3.90 Del.quantity cm3/: 12.0...16.0

1000 s: (9.5...19.5)

cm3 : 3.00 Spread

1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

mm

Note remarks

: DAF 8,3 p 2 : 02.10.89 Test sheet Edition : 28.6.89 Replaces : ISO-4113 Test oil

Combination no. : 0 401 846 905

Injection pump

Pump designation : PE6P110A720RS3225-1

EP type number : 0 411 816 762

Governor

Governor design. : RQ250/1200PA913 : 0 421 801 477 Governer no.

Customer-spec. information Customer : DAF

Engine : HT 168

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.70...3.80 Prestroke mm

: (3.65...3.85)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-

: 0-60-120-180-240-300 Phasing

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 12.40...12.50

Del.guantity cm3/: 12.0...12.2

100 s: (11.7...12.4)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 250.0 Rack travel in mm : 7.2...7.4 Del.quantity cm3/ : 1.4...1.9

100 s: (1.1...2.1)

cm3 : 0.4Spread 100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 550 Speed

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed Aneroid pressure h: 1000

Del.quantity : 120.0...124.5)

cm3 Spread

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 15.8

Testing:

1st rack travel in: 11.40

rpm : 1235...1250 Speed 2nd rack travel in: 4.00

rpm : 1325...1355 Speed

4th rack travel in: 1400

Speed rpm : 0.00...1.40

LOW TOLE 1 Setting point w/out bumper spring

Speed rpm : 250 Rack travel in mm : 5.8 Testing: : 100 Speed rpm Minimum rack trave: 8.00 : 250 Speed rpm Rack travel in mm : 5.70...5.90 Rack travel in mm : 2.00 : 330...370 Speed rpm TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 12.70...12.80 2nd speed rpm : 1200 Rack travel in m: 12.60...12.80 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 1000 Pressure Rack travel mm : 12.40...12.50 Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 10.80...10.90 2nd pressure hPa : 395 Rack travel in m: 12.00...12.10 3rd pressure hPa : 320 Rack travel in m: 11.50...11.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 600 Speed Del.quantity cm3/: 83.5...85.5 1000 s: (81.0...88.0) BREAKAWAY 1st version 1mm rack travel less than

LOW IDLE

Speed

A04

full load rack tr: 11.40 rpm : 1235...1250 Speed

: 250

rpm

Rack travel in mm : 5.70...5.90 Remarks:

Note remarks

Test sheet : DAF 8,3 p 5 : 09.11.89

Fdition Replaces

: ISO-4113 Test oil

Combination no. : 0 401 846 905

Injection pump

Pump designation : PE6P110A720RS3225Z

EP type number : 0 411 816 762

Governor

Governor design. : RQ250/1200PA913

Governer no. : 0 421 801 477

Customer-spec. information

: DAF Customer

: HT 168 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter

x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.70...3.80 : (3.65...3.85) Prestroke mm

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-Firing order

: 0-60-120-180-240-300 Phasing

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 12.30...12.40

Del.guantity cm3/: 12.0...12.2

100 s: (11.7...12.4)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 250.0 2nd speed

Rack travel in mm : 7.2...7.4 Del.quantity cm3/ : 1.4...1.9 100 s: (1.1...2.1)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 550 Speed Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed Aneroid pressure h: 1000

Del.quantity : 120.0....22... 1000 : (117.5...124.5)

: 4.00 cm3

Spread 1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm

Rack travel in mm: 15.8

Testing:

1st rack travel in: 11.30

Speed rpm: 1235...1250 2nd rack travel in: 4.00

Speed rpm: 1300...1330 4th rack travel in: 1400

rpm : 0.00...1.40Speed

Setting point w/out bumper spring

rpm : 250 Speed Rack travel in mm : 5.8 Testing: rpm : 100 Speed Minimum rack trave: 8.00 Speed rpm : 250 Rack travel in mm : 5.70...5.90 Rack travel in mm : 2.00 : 320...360 Speed rpm TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 12.60...12.70 2nd speed rpm : 1200 Rack travel in m: 12.50...12.70 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rom hPa : 1000 Pressure : 12.30...12.40 Rack travel mm Measurement $1/\min : 600$ Speed 1st pressure hPa : -Rack travel in m: 10.80...10.90 2nd pressure hPa : 395 Rack travel in m: 12.00...12.10 3rd pressure hPa : 320 Rack travel in m: 11.50...11.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 600 Speed Del.quantity cm3/: 83.5...85.5 1000 s: (81.0...88.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.30

Speed rpm : 1235...1250 LOW IDLE : 250 Speed rpm A06

Rack travel in mm : 5.70...5.90 Remarks:

Note remarks

: DAF 8,3 p 3 : 02.10.89 Test sheet Edition : 23.6.89 Replaces : ISO-4113 Test oil

Combination no. : 0 401 846 906

Injection pump

Pump designation : PE6P110A720RS3225-1

: 0 411 816 762 EP type number

Governor

Governor design. : RQV250...1200PA910

: 0 421 813 746 Governer no.

Customer-spec. information : DAF Customer

: HT 200 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. . C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 015 Test Lines

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 12.40...12.50

Del.guantity cm3/: 12.0...12.2

100 s: (11.7...12.4)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 250.0 Rack travel in mm : 7.2...7.4 Del.quantity cm3/ : 1.4...1.9

100 s: (1.1...2.1)

Spread cm3 : 0.4100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 1.00...1.40 travel mm

rpm : 450 2nd speed

: 2.90...3.30 travel mm

rpm : 800 3rd speed

: 4.70...5.10 travel mm

rpm : 1200 4th speed

: 7.80...8.00 travel mm

rpm : 1500 5th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1235

Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1000

: 120.0...122.0 Del.quantity 1000 : (117.5...124.5)

: 4.00 Spread cm3

: (7.50) 1000

RATED SPEED

1st version

Control lever position degrees: 50...58 Testing: 1st rack travel in: 11.40 rpm : 1240...1250 Speed 2nd rack travel in: 4.00 Speed rpm : 1335...1365 4th rack travel in: 1450 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 13...21 Testing: Speed : 100 rpm Minimum rack trave: 8.00 : 250 Speed rom Rack travel in mm : 5.70...5.90 CONSTANT REGULATION rpm : 280...400 Speed Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 1000 Pressure Rack travel mm : 12.40...12.50 Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 10.80...10.90 2nd pressure hPa : 395 Rack travel in m: 12.00...12.10 3rd pressure hPa : 320 Rack travel in m: 11.50...11.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 600 Speed Del.quantity cm3/: 83.5...85.5 1000 s: (81.0...88.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.40

Speed rpm : 1240...1250

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.70...5.90

Remarks:

ai No.

80A

Note remarks

Test sheet : DAF 8,3 p 6 : 09.11.89 Edition

Replaces

Test oil : ISO-4113

: 0 401 846 906 Combination no.

Injection pump

Pump designation : PE6P110A720RS3225Z

EP type number : 0 411 816 762

Governor

Governor design. : RQV275...1200PA910

: 0 421 813 746 Governer no.

Customer-spec. information

Customer : DAF

: HT 200 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-

: 0-60-120-180-240-300 Phasing

Tolerance $+ - \dots : 0.50 (0.75)$

BASIC SETTING

rpm : 10001st speed

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 12.0...12.2

100 s: (11.7...12.4)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 275.0 2nd speed Rack travel in mm: 7.2...7.4 Del.quantity cm3/: 1.4...1.9

100 s: (1.1...2.1)

cm3 : 0.4 100 s: (0.7) Spread

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed : 1.00...1.40 travel mm

rpm : 450 2nd speed

: 2.90...3.30 travel mm

: 800 3rd speed rpm : 4.70...5.10 travel mm

: 1200 4th speed rpm travel mm : 7.80...8.00

: 1500 5th speed rom

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1235 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

: 120.0...122.0 Del.quantity 1000 : (117.5...124.5)

cm3 : 4.00 Spread

1000 : (7.50)

RATED SPEED

1st version

Control lever position degrees: 50...58 Testing: 1st rack travel in: 11.30 rpm : 1240...1250 Speed 2nd rack travel in: 4.00 Speed rpm : 1335...1365 4th rack travel in: 1450 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 13...21 Testing: Speed : 100 rpm Minimum rack trave: 8.00 Speed rpm : 275 Rack travel in mm : 5.70...5.90 CONSTANT REGULATION rpm : 280...400 Speed Aneroid/Altitude Compensator Test 1st version Settina : 600 Speed mqn hPa : 1000 Pressure Rack travel mm : 12.30...12.40 Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 10.80...10.90 2nd pressure hPa : 395 Rack travel in m: 12.00...12.10 3rd pressure hPa : 320 Rack travel in m: 11.50...11.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 600 Speed Del.quantity cm3/: 83.5...85.5 1000 s: (81.0...88.0) **BREAKAWAY** 1st version 1mm rack travel less than

Speed rpm : 1240...1250

LOW IDLE

Speed rpm : 275 Rack travel in mm : 5.70...5.90

Remarks:

A10

full load rack tr: 11.30

Note remarks

Test sheet : MB 11,0 L 5 : 06.10.89 : 3.7.89 Edition Replaces : ISO-4113 Test oil

Combination no. : 0 401 846 907

Injection pump

Pump designation: PE6P120A320LS3815-13

: 0 411 826 782 EP type number

Governor

Governor design. : RQV350..1050PA925 : 0 421 813 764 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

: OM 441 A Engine

: 191.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.60...3.70 Prestroke mm

: (3.55...3.75) Rack travel in mm : 9.00...12.00

: 6-3-5-2-4-1 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 18.8...19.0

100 s: (18.5...19.3)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.0 2nd speed Rack travel in mm : 4.6...5.2 Del.quantity cm3/ : 1.4...2.2

100 s: (1.1...2.5)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

: 1.40...1.60 travel mm

rpm : 800 2nd speed

: 4.70...5.10 travel mm

rpm : 1100 3rd speed

travel mm : 7.60...8.20 : 1175

4th speed rpm

: 9.20...9.80 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1080 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

Aneroid pressure h: 900 : 188.0...190.0 Del.quantity 1000 : (185.0...193.0) cm3 : 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 60...68 Testing: 1st rack travel in: 10.70 rpm : 1090...1100 2nd rack travel in: 4.00 rpm : 1150...1180 Speed 4th rack travel in: 1250 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 10...14 Testing: : 250 Speed rpm Minimum rack trave: 8.00 : 350 rom Rack travel in mm : 4.60...5.20 CONSTANT REGULATION rpm : 350...550 Speed TORQUE CONTROL Dimension a mm : 1.30 Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 11.70...11.90 2nd speed rpm : 950 Rack travel in m: 12.40...12.60 3rd speed rpm : 850 Rack travel in m: 12.60...12.80 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm Pressure hPa : 9.30...9.50 Rack travel mm

Measurement $1/\min : 500$ Speed 1st pressure hPa : 400 Rack travel in m: 10.10...10.30

START CUT-OUT 1/min: 270 (290) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 rpm : 800 Speed Del.quantity cm3/: 211.0...215.0 1000 s: (208.0...218.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 900 rpm : 1050 Speed Del.quantity cm3/: 155.0...157.0 * 1000 s: (152.0...160.0) Spread cm3 1000 s: (12.0) Aneroid pressure h: -Speed rpm Del.quantity cm3/: 127.0...129.0 1000 s: (124.0...132.0) cm3 : 8.00 Spread 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.70 rpm : 1090...1100 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 190.0...210.0 1000 s: (186.0...214.0) Remarks: * = Set at reduced-delivery stop.

2nd pressure hPa : 600

Rack travel in m: 11.70...12.10

Note remarks

: MB 11,0 s17 : 15.08.89 : 23.6.89 Test sheet Edition Replaces Test oil : ISO-4113

Combination no. : 0 401 846 909

Injection pump

Pump designation: PE6P110A320LS3835-2

: 0 411 816 761 EP type number

Governor

: RQV350...1050PA378-Governor design.

10

: 0 421 813 765 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

: OM 441 Engine

: 160.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 Prestroke mm : (3.95...4.15)

Rack travel in mm : 9.00...12.00

: 6-3-5-2-4-1 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - ., ... 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm : 10501st speed

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 13.8...14.0

100 s: (13.5...14.2)

Spread cm3 : 0.4

100 s: (0.8)

rpm : 350.02nd speed

Rack travel in mm : 7.8...8.2 Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.0)

cm3 : 0.4Spread

100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed : 1.10...1.30 travel mm

2nd speed rpm : 500

: 3.50...3.80 travel mm

3rd speed rpm : 1100

: 8.00...8.50 travel mm

: 1150 4th speed rpm

: 9.20...9.80 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1080 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

Del.quantity : 7.30.0....142.5)

cm3 : 4.00 1000 : (8.00) Spread

RATED SPEED

1st version Control Lever

position degrees: 61...69

Testing:

1st rack travel in: 11.90 rpm : 1090...1100 Special

2nd rack travel in: 4.00

Speed rpm : 1135...1165 4th rack travel in: 1300

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 11...19

Testing:

Speed rpm : 200 Minimum rack trave: 9.50 : 350 Speed rpm

Rack travel in mm : 7.80...8.20

CONSTANT REGULATION

rpm : 350...550 Speed

START CUT-OUT

1/min: 270 (290) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

rpm_ : 750 Speed

Del.quantity cm3/: 125.0...129.0 1000 s: (122.0...132.0)

cm3 : 6.00 1000 s: (8.00) Spread

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.90

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 140.0...160.0

1000 s: (136.0...164.0)

Remarks:

Note remarks

: DEE 10,1 d8 Test sheet : 24.08.89 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 076 032

Injection pump

Pump designation : PES6P110A720RS296 EP type number : 0 412 016 037

Governor

Governor design. : RSV400...1050P0/426D

: 0 421 835 082 Governer no.

Customer-spec. information : JOHN DEERE Customer

: 6619 A Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.5

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00x2,00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ___

BEGINNING OF DELIVERY

Prestroke mm : 2,75...2,85 : (2,70...2,90) Rack travel in mm : 9,00...12,00 : 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0,50 (0,75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm: 12,20

Del.quantity cm3/: 17,2...17,4

100 s: (-)

Spread cm3 : 0.4

100 s: (-)

rpm : 400 2nd speed Rack travel in mm: 6,80 Del.guantity cm3/: 1,9...2,5

100 s: (-)

cm3 : 0,4 100 s: (-) Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1050 : 172,0...174,0 Del.quantity

1000 : (-) Spread

cm3 : 4,0 1000 : (-)

RATED SPEED

1st version Control lever

position degrees: 36...44

Testing:

1st rack travel in: 11,20 Speed rpm : 1095...1105 2nd rack travel in: 5,90 Speed rpm : 1135...1165

LOW IDLE 1 Control lever

position degrees: 15...23

Setting point w/out bumper spring

Speed rpm: 400 Rack travel in mm: 6,30

Testing:

: 100 Speed rpm Minimum rack trave: 19,00 : 400 rpm

Rack travel in mm : 6,70...6,90 Rack travel in mm : 2,00

Speed : 520...580 rpm

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 630 Rack travel in m: 12,60

Aneroid/Altitude Compensator Test

1st version

Settina

: 500 Speed rpm Pressure hPa : 273,2

Rack travel mm : 9,65...9,75

Measurement

1/min: 500 Speed

1st pressure hPa : 526,5

Rack travel in m: 11,30...1,90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm

Del.quantity cm3/: 177,0...180,0 1000 s: (-)

Spread cm3 : 6,0

1000 s: (-)

: 550 Speed rom Del.quantity cm3/: 84,0...92,0

1000 s: (-)

cm3 : 6,0Spread

1000 s: (-)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11,20

rpm : 1095...1105 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 170,0

1000 s: (-)

Rack travel in mm : 19,00...21,00

HIGH IDLE

1st version

: 1150 Speed rpm

Rack travel in mm : 5,90 Del.quantity cm3/ : 47,0...57,0 1000 s: (-)

cm3 : 6,0 1000 s: (-) Spread

LOW IDLE

rpm : 400 Speed Rack travel in mm: 6,80

Del.quantity cm3/: 19.0...25.0 1000 s: (-)

cm3 : 4,0Spread

1000 s: (-)

Remarks:

Start-of-delivery mark at control-rod travel 10.5 mm and 15, after start of

delivery.

Note remarks

: SCA 11,0 v2 Test sheet : 07.09.89 Edition : 24.7.87 Replaces : ISO-4113 Test oil

: 0 402 646 804 Combination no.

Injection pump

Pump designation : PE6P120A720RS7004 : 0 412 626 801 EP type number

Governor

Governor design. : RQ900PA528 : 0 421 801 127 Governer no.

Customer-spec. information

: SAAB - SCANIA Customer

: DS11 43,44,45 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm : (4.95...5.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 20.7...20.9

100 s: (20.4...21.2)

Ç

cm3 : 0.6Spread

100 s: (0.9)

GUIDE SLEEVE POSITION

Control-lever position Degree: -2

rpm : 600 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed

: 207.0...209.0 Del.quantity 1000 : (204.0...212.0)

: 6.00 Spread cm3 (9.00) 1000

RATED SPEED

1st version

Control lever

position degrees: 22...30

Testing:

1st rack travel in: 11.80 rpm : 900...905 Speed 2nd rack travel in: 4.00 rpm : 941...955 Speed 4th rack travel in: 1000

rpm : 0.00...1.00Speed

LOW IDLE 1

Testing:

Speed rpm : 100 Rack travel in mm: 2.00

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 240.0...290.0 1000 s: (-)

Rack travel in mm: 20.00...21.00

HIGH IDLE

1st version

Rack travel in mm : 4.90...5.10

cm3 : 4.00 Spread

1000 s: (7.00)

Remarks:

Delivery—valve spring pre-tension 3.2...3.4 mm. Permissible alteration of 3.0...3.5 mm

ADDITIONAL INFORMATION

Check and set without ROBO diaphragam

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania test specifications taken over on Oct. 17, 1988

Engine model DS 11 - 17, before top dead center.

Engine model DSI 11 - 16, before top dead center.

Firing sequence of engine: 1-5-3-6-2-4.

Note remarks

: SCA 14.0 h2 : 07.02.89 Test sheet Edition : 29.1.88 Replaces : ISO-4113 Test oil

Combination no. : 0 402 648 839

Injection pump

Pump designation : PE8P120A920/4LS7125T

: 0 412 628 824 EP type number

Governor

Governor design. : RQV200...950PA736-1

: 0 421 813 551 Governer no.

Customer-spec. information : SAAB-SCANIA Customer

: DSC14 03 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

: 1- 2- 7- 3- 4- 5-6-8 Firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ., : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 22.1...22.3

100 s: (21.8...22.6)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 225.0 2nd speed

Rack travel in mm: 4.9...5.3

Del.guantity cm3/: 1.6...2.0 100 s: (-)

cm3 : 0.3Spread

100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 225 1st speed

: 1.20...1.60 travel mm

rpm : 350 : 2.30...2.90 2nd speed travel mm

rpm : 650 3rd speed : 4.40...5.00 travel mm

rpm : 995 4th speed

: 7.70...7.90 travel mm

rpm : 1125 5th speed

: 9.30...9.70 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1040

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Aneroid pressure h: 900

Del.quantity : 221.0...226.0)

cm3 : 6.00 1000 : (9.00) Spread

RATED SPEED

1st version Control lever

position degrees: 56...64

Testina:

1st rack travel in: 12.80 rpm : 990...1000 Speed

2nd rack travel in: 4.00

rpm : 1110...1140 Speed

4th rack travel in: 1250

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 6...14

Testina:

: 100 Speed rpm Minimum rack trave: 6.50 : 225 man

Rack travel in mm : 4.90...5.10

Rack travel in mm: 2.00

: 360...420 Speed rom.

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 900 Pressure

: 13.80...13.90 Rack travel mm

Measurement

1/min : 500Speed

1st pressure hPa : -

Rack travel in m: 11.20...11.60

2nd pressure hPa : 365

Rack travel in m: 12.80...12.90 3rd pressure hPa : 215

Rack travel in m: 11.90...12.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 ; 950 Speed rpm

Del.quantity cm3/: 211.0...219.0

1000 s: (209.0...221.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 158.0...162.0 1000 s: (156.0...164.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80

rpm : 990...1000 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 240.0...290.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225 Rack travel in mm : 4.90...5.10

Remarks:

Test specifications approved by Scania

on 1987-12-15

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO

diaphragm.

For comb. with letter index see

VDT-I-400/116.

For sealing see VDT-I-400/117.

* Increase in control-rod travel with

respect to setting at least 0.1 mm

Start of delivery - engine: 16, before

Engine firing sequence: 1-5-4-2-6-3-7-8

Note remarks

Test sheet

Edition : 02.05.89

Replaces

Test oil : ISO-4113

Injection pump

Pump designation : PE5P100A720RS491 EP type number : 9 400 087 044

Governor

Governor design. : RQ300/1100PA269-1

Governer no. : 0 421 801 237

Customer—spec. information Customer : M B B

Engine : 0M 355-5

1st version kW : 150.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60

: (3.45...3.65) Rack travel in mm : 9.00...12.00

Firing order : 1-2-4-5-3

Phasing : 0-72-144-216-288

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 12.5...12.7

100 s: (12.3...12.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.1...8.3 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.5) Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 2.30...2.60

2nd speed rpm : 600

travel mm : 6.90...7.10

3rd speed rpm: 1150

travel mm : 7.30...7.70 th speed rpm : 1200

4th speed rpm : 1200 travel mm : 10.00...10.60

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm: 600

Rack travel in mm : 13.40...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1100

Del.quantity : 125.0...127.0

1000 : (123.0...129.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm: 13.6 Testing: 1st rack travel in: 11.70 rpm : 1145...1160 Speed 2nd rack travel in: 4.00 rpm : 1190...1220 Speed 4th rack travel in: 1350 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring : 300 Speed rpm Rack travel in mm: 8.1 Testing: : 100 Speed rpm Minimum rack trave: 9.70 rpm : 300 Speed Rack travel in mm : 8.00...8.20 Rack travel in mm : 2.00 Speed rpm : 375...415 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/: 117.0...121.0 1000 s: (114.5...123.5) cm3 : 5.00Spread 1000 s: (7.) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.70 rpm : 1145...1160 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 150.0...170.0 1000 s: (146.0...174.0) Remarks:

Note remarks

: MAC 11, 1a11 Test sheet : 31.10.89 Edition : 30.5.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 736 800

Injection pump

Pump designation: PES6P120A720/3RS7135

: 0 412 726 818 EP type number

Governor

Governor design. : RQV325...1050PA848-

Governer no. : 0 421 815 203

Customer-spec. information Customer : MACK

: EM6 300 2VH Engine

: 224.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0.6

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Phasing

Tolerance $+ - \frac{1}{2}$: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 19.9...20.1

100 s: (19.6...20.4)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm: 4.8...5.0 Del.quantity cm3/: 3.8...4.4

100 s: (3.6...4.6)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

: 1.40...1.60 travel mm

rpm : 450 2nd speed : 2.50...2.80 travel mm

rpm : 800 3rd speed

travel mm : 4.80...5.00

rpm : 1050 4th speed

: 7.30...7.60 rpm : 1200 travel mm

5th speed

: 9.40...9.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1200

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 900 Del.quantity : 199.0...201.0 1000 : (196.0...204.0) : 5.00 cm3 Spread 1000 : (9.00)RATED SPEED 1st version Control lever position degrees: 56...64 Testing: 1st rack travel in: 11.90 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 Speed rpm : 1170...1200 4th rack travel in: 1300 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 10...18 Testing: Speed rpm : 275 Minimum rack trave: 6.30 : 325 rpm Rack travel in mm : 4.80...5.00 CONSTANT REGULATION rpm : 325...600 Speed TORQUE CONTROL Torque control curve – 1st version rpm : 1050 1st speed Rack travel in m: 12.90...13.00 rpm : 630 2nd speed Rack travel in m: 13.00...13.10 3rd speed rpm : 500 Rack travel in m: 0.00...12.60 Aneroid/Altitude Compensator Test 1st version Setting : 630 Speed rom hPa : 900 Pressure : 13.00...13.10 Rack travel mm Measurement 1/min: 630 Speed 1st pressure hPa : -Rack travel in m: 7.80...8.20 2nd pressure hPa : 190

3rd pressure hPa : 410 Rack travel in m: 11.40...11.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 : 630 Speed rpm Del.quantity cm3/: 213.0...219.0 1000 s: (210.0...222.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: rpm_ : 400 Speed Del.quantity cm3/: 121.0...125.0 1000 s: (119.0...127.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.90 Speed rpm : 1090...1100 STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 110.0...150.0 1000 s: (100.0...160.0) Rack travel in mm : 7.80...8.20 LOW IDLE rpm : 325 Speed Rack travel in mm : 4.80...5.00 Del.quantity cm3/: 38.0...44.0 1000 s: (36.0...46.0) cm3 : 8.00Spread 1000 s: (12.00) Remarks: Delivery-valve spring pre-tension 3.0...3.2 mm. APPLICATION Omnibus Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Rack travel in m: 9.10...9.20

Prestroke mm : 2.75...2.85 : (2.70...2.90) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MAC 11,1 a : 30.10.89 Edition Replaces : 7.2.89 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Tolerance + - ., ... 0.50 (0.75)Combination no. : 0 402 746 810 Injection pump Time to cyl. no. : 1 Pump designation : PES6P120A720RS7135 EP type number : 0 412 726 807 BASIC SETTING Governor rpm: 900 Governor design.: RQV325...900PA848K 1st speed Governer no. : 0 421 815 168 Rack travel in mm : 13.90...14.00 Customer—spec. information Del.quantity cm3/: 23.6...23.8 Customer : MACK : E6-350 4VH 100 s: (23.3...24.1) Engine cm3 : 0.5: 261.0 Spread 1st version kW : 1800 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 325.0
Rack travel in mm : 4.0...4.2
Del.quantity cm3/ : 3.2...3.8 Test oil inlet temp. , C : 38...42 100 s: (3.0...4.0) cm3 : 0.8Overflow valve Spread 100 s: (1.2) : 2 417 413 011 Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 101 assembly GUIDE SLEEVE TRAVEL 1st speed rpm : 325 : 1.20...1.40 travel mm Opening 1 rpm : 450 pressure, bar : 207...210 2nd speed : 3.10...3.30 travel mm rpm : 850 3rd speed Orifice plate : 5.90...6.10 : 0,6 travel mm diameter mm rpm : 1000 4th speed : 7.50...7.70 travel mm : 1 680 750 008 Test Lines GUIDE SLEEVE POSITION Control-lever position Outside diameter x Wall thickness Degree: -1 rpm : 1130 : 6.00X2.00X600 x Length mm Speed Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

rpm : 900

Del.quantity : 236.5...238.5 1000 : (233.5...241.5)

Aneroid pressure h: 900

1st version

Speed

(A) Injection pump setting values

per values

Test pressure, bar: 17...19

BEGINNING OF DELIVERY

Insp. values in parentheses Set equal delivery quant.

: 5.00 Spread cm31000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 53...61 Testing: 1st rack travel in: 12.90 rpm : 950...960 Speed 2nd rack travel in: 4.00 Speed rpm : 1075...1105 4th rack travel in: 1250 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 7...15 Testing: Speed rpm : 275 Minimum rack trave: 5.50 rpm Rack travel in mm : 4.00...4.20 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version rpm : 900 1st speed Rack travel in m: 13.90...14.00 rpm : 625 2nd speed Rack travel in m: 14.10...14.20 3rd speed rpm: 800 Rack travel in m: 14.00...14.10 th speed rpm : 500 Rack travel in m: 0.00...13.50 4th speed rpm Aneroid/Altitude Compensator Test 1st version Setting Speed : 625 rpm hPa : 900 Pressure : 14.10...14.20 Rack travel mm Measurement

1/min: 625 Speed 1st pressure hPa : -Rack travel in m: 8.50...8.90 2nd pressure hPa : 275 Rack travel in m: 10.00...10.10 3rd pressure hPa : 570 A26

Rack travel in m: 12.30...12.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 : 625 Speed rom Del.quantity cm3/: 257.0...263.0 1000 s: (254.0...266.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: rpm : 400 Speed Del.quantity cm3/: 142.0...146.0 1000 s: (140.0...148.0) **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 12.90 rpm : 950...960 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 170.0...210.0 1000 s: (160.0...220.0) Rack travel in mm: 8.50...8.90

LOW IDLE

rpm : 325 Speed Rack travel in mm : 4.00...4.20 Del.quantity cm3/: 32.0...38.0 1000 s: (30.0...40.0) cm3 : 8.00Spread 1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension 3.0...3.2 mm.

:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Prestroke mm : 2.75...2.85 : (2.70...2.90) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MAC 11,1 a1 Test sheet : 31.10.89 Edition : 7.2.89 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 746 814 Injection pump Time to cyl. no. : 1 Pump designation : PES6P120A720RS7135 EP type number : 0 412 726 807 BASIC SETTING Governor Governor design. : RQV325...850PA848-1K 1st speed rom: 850 : 0 421 815 169 Governer no. Rack travel in mm : 12.90...13.00 Customer-spec. information Del.quantity cm3/: 20.0...20.2 : MACK Customer 100 s: (19.7...20.5) : E6-300 4VH Engine : 224.0 cm3 : 0.5Spread 1st version kW : 1900 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 325.0 2nd speed Rack travel in mm : 4.5...4.7 Del.quantity cm3/ : 3.2...3.8 Test oil inlet temp. _, C : 38...42 100 s: (3.0...4.0) cm3 : 0.8 Overflow valve Spread 100 s: (1.2) : 2 417 413 011 Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 101 GUIDE SLEEVE TRAVEL assembly 1st speed rpm : 325 travel mm : 1.20...1.40 Openina (pressure, bar : 207...210 rpm : 450 2nd speed : 2.80...3.10 travel mm Orifice plate 3rd speed rpm: 850 : 6.20...6.40 diameter mm : 0,6 travel mm rpm : 1000 4th speed : 7.70...7.90 travel mm : 1 680 750 008 Test lines GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: -1 rpm : 1100 : 6.00x2.00x600 x Length mm Speed Rack travel in mm : 7.00...13.00 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP 1st version per values

Speed

rpm : 850

Del.quantity : 200.3...202... 1000 : (197.5...205.5)

Aneroid pressure h: 900

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Spread

: 5.00 cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 52...60

Testing:

1st rack travel in: 11.90

rpm : 900...910 Speed

2nd rack travel in: 4.00

rpm : 1025...1055 Speed

4th rack travel in: 1100 Speed rpm: 0.00...1.00

LOW IDLE 1

Control lever position degrees: 7...15

Testing:

Speed rpm : 275

Minimum rack trave: 6.00

rpm

Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve – 1st version

: 850 1st speed rpm

Rack travel in m: 12.90...13.00

rpm : 700 2nd speed

Rack travel in m: 13.30...13.50

3rd speed rpm : 600

Rack travel in m: 13.50...13.70 th speed rpm : 500

4th speed

Rack travel in m: 0.00...13.10

Aneroid/Altitude

Compensator Test

1st version

Setting Speed

: 600 rpm

Pressure hPa : 900

: 13.50...13.70 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 9.90...10.30

2nd pressure hPa : 250

Rack travel in m: 10.90...11.00

3rd pressure hPa : 475

Rack travel in m: 12.60...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 700 Del.quantity cm3/ : 217.0...223.0

1000 s: (214.0...226.0)

Aneroid pressure h: 900

Speed : 600 rpm

Del.quantity cm3/: 233.0...239.0

1000 s: (230.0...242.0)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 154.0...158.0

1000 s: (152.0...160.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90

rpm : 900...910 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 195.0...235.0

1000 s: (185.0...245.0)

Rack travel in mm : 9.90...10.30

LOW IDLE

Speed : 325 rpm

Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 32.0...38.0

1000 s: (30.0...40.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension 3.0...3.2 mm.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

: MAC 11,1 a2 Test sheet : 31.10.89 Edition : 7.2.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 746 815

Injection pump

Pump designation : PES6P120A720RS7135

EP type number : 0 412 726 807

Governor

Governor design. : RQV325...850PA848-2K

: 0 421 815 170 Governer no.

Customer-spec. information : MACK Customer

: E6-275 4VH Engine

1st version kW : 202.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85 : (2.70...2.90) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firina order

Phasing : 0-60-120-180-240-300

Tolerance + -., : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 18.1...18.3

100 s: (17.8...18.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm: 4.5...4.7 Del.quantity cm3/: 3.2...3.8

100 s: (3.0...4.0)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 325 : 1.20...1.40 travel mm

rpm : 450 2nd speed

: 2.80...3.10 travel mm

rpm : 850 3rd speed

: 6.20...6.40 travel mm

rpm : 1000 4th speed

: 7.70...7.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1110 Speed

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 900

Del.quantity : 181.0...186.0)

: 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 52...60 Testina: 1st rack travel in: 11.00 Speed rpm : 900...910 2nd rack travel in: 4.00 rpm : 1025...1055 Speed 4th rack travel in: 1150 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 7...15 Testing: Speed : 275 rpm Minimum rack trave: 6.00 rpm Rack travel in mm : 4.50...4.70 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version rpm : 850 1st speed Rack travel in m: 12.00...12.10 : 600 2nd speed rpm Rack travel in m: 12.60...12.70 rpm : 700 3rd speed Rack travel in m: 12.50...12.70 th speed rpm : 500 Rack travel in m: 0.00...12.40 4th speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm hPa : 900 Pressure Rack travel mm : 12.60...12.70

 $1/\min: 600$

Rack travel in m: 9.50...9.90

Rack travel in m: 10.30...10.40

FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 : 600 Speed rpm Del.quantity cm3/: 210.5...216.5 1000 s: (207.5...219.5) cm3 : 8.00 1000 s: (12.0) Spread Aneroid pressure h: rpm : 400 Speed Del.quantity cm3/: 144.0...148.0 1000 s: (142.0...150.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.00 rpm : 900...910 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 160.0...200.0 1000 s: (150.0...210.0) Rack travel in mm : 9.50...9.90 LOW IDLE rpm : 325 Speed Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 32.0...38.0 1000 s: (30.0...40.0) cm3 : 8.00 1000 s: (12.00) Spread Remarks: Delivery—valve spring pre-tension 3.0...3.2 mm. Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Rack travel in m: 11.50...11.90

Measurement

1st pressure hPa : -

2nd pressure hPa : 215

3rd pressure hPa : 360

Speed

: 2.75...2.85 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (2.70...2.90) Rack travel in mm : 9.00...12.00 Note remarks Firing order : 1-5-3-6-2-4 Test sheet : MAC 11,1 a3 : 31.10.89 : 7.2.89 Edition Replaces : 0-60-120-180-240-300 : ISO-4113 Test oil Phasing Combination no. : 0 402 746 816 Time to cyl. no. : 1 Injection pump Pump designation : PES6P120A720RS7135 : 0 412 726 807 BASIC SETTING EP type number Governor Governor design. : RQV325...875PA848-3K Governer no. : 0 421 815 171 rom: 875 1st speed Rack travel in mm : 10.80...10.90 Customer-spec. information Del.quantity cm3/: 16.3...16.5 Customer : MACK 100 s: (16.0...16.8) : EM6-250L 4VH Engine : 186.0 cm3 : 0.5Spread 1st version kW Rated speed : 1950 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 325.02nd speed Rack travel in mm: 4.5...4.7 Test oil Del.quantity cm3/: 3.9...4.5 inlet temp. _, C : 38...42 100 s: (3.7...4.7) cm3 : 0.8 Overflow valve Spread : 2 417 413 011 100 s: (1.2) (B) Setting of injection pump Inlet press., bar: 1.50 with governor Test nozzle holder : 1 688 901 101 GUIDE SLEEVE TRAVEL assembly 1st speed rpm : 325 : 1.20...1.40 travel mm Openina pressure, bar : 207...210 2nd speed rpm: 450 : 2.80...3.20 travel mm 3rd speed rpm: 850 Orifice plate : 6.20...6.40 : 0.6 travel mm diameter mm rpm : 1000 4th speed : 7.70...7.90 travel mm Test lines : 1 680 750 008 GUIDE SLEEVE POSITION Outside diameter Control-lever position Degree: -1 x Wall thickness Speed rpm : 1100 Rack travel in mm : 7.00...13.00 x Length mm : 6.00x2.00x600 (A) Injection pump setting values FULL LOAD DELIV. AT FULL LOAD STOP Insp. values in parentheses Set equal delivery quant. 1st version per values rpm : 875 Speed

Aneroid pressure h: 1200

Del.quantity : 103.0...168.0)

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

cm3 : 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 52...60 Testing: 1st rack travel in: 9.80 rpm : 925...935 Speed 2nd rack travel in: 4.00 rpm : 1010...1040 Speed 4th rack travel in: 1100 rom : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 9...17 Testina: : 275 Speed rom Minimum rack trave: 6.00 rom Rack travel in mm : 4.50...4.70 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version rom : 875 1st speed Rack travel in m: 10.80...10.90 rpm : 510 2nd speed Rack travel in m: 13.00...13.20 3rd speed rpm : 700 Rack travel in m: 11.60...11.80 4th speed rpm : 550 Rack travel in m: 0.00...13.10 Aneroid/Altitude Compensator Test 1st version Setting rpm : 510 hPa : 1200 Speed rom Pressure Rack travel mm : 13.00...13.20 Measurement 1/min: 510 Speed 1st pressure hPa : -Rack travel in m: 8.60...9.00 2nd pressure hPa : 215 Rack travel in m: 10.30...10.40

Rack travel in m: 12.20...12.60 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed rpm Del.quantity cm3/: 240.0...246.0 1000 s: (237.0...249.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 400 Del.quantity cm3/ : 146.0...150.0 1000 s: (144.0...152.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.80 Speed rpm : 925...935 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 145.0...185.0 1000 s: (135.0...195.0) Rack travel in mm : 8.60...9.00 LOW IDLE Speed rpm : 325 Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 39.0...45.0 1000 s: (37.0...47.0) cm3 : 8.00 1000 s: (12.00) Spread Remarks: Delivery-valve spring pre-tension 3.0...3.2 mm. Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

3rd pressure hPa : 435

: 2.75...2.85 : (2.70...2.90) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order Test sheet : MAC 11,1 a4 : 31.10.89 Edition : 29.3.89 Replaces : 0-60-120-180-240-300 Test oil : ISO-4113 Phasing Combination no. : 0 402 746 817 Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 1 Injection pump Pump designation : PES6P120A720RS7135 EP type number : 0 412 726 807 BASIC SETTING Governor Governor design. : RQV325...900PA848-4K 1st speed rpm: 900 : 0 421 815 173 Governer no. Rack travel in mm : 15.20...15.30 Customer-spec. information Del.quantity cm3/: 25.0...25.2 Customer : MACK 100 s: (24.7...25.5) : EC6-350 4VH Engine cm3 : 0.5: 261.0 Spread 1st version kW : 1800 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 325.0 2nd speed Rack travel in mm : 4.9...5.1 Del.quantity cm3/ : 3.9...4.5 Test oil inlet temp. _, C : 38...42 100 s: (3.7...4.7) cm3 : 0.8 Overflow valve Spread 100 s: (1.2) : 2 417 413 011 (B) Setting of injection pump Inlet press., bar: 1.50 with governor Test nozzle holder : 1 688 901 101 GUIDE SLEEVE TRAVEL assembly 1st speed rpm : 325 : 1.20...1.40 **Opening** travel mm pressure, bar : 207...210 2nd speed rpm : 450 travel mm : 3.10...3.30 3rd speed rpm : 850 Orifice plate travel mm : 5.90...6.10 4th speed rpm : 1000 diameter mm : 0,6 : 7.50...7.70 travel mm : 1 680 750 008 Test lines GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: -1 Speed rpm : 1130 Rack travel in mm : 7.00...13.00 : 6.00X2.00X600 x Length mm (A) Injection pump setting values FULL LOAD DELIV. AT FULL LOAD STOP Insp. values in parentheses Set equal delivery quant.

1st version

Speed

rpm : 900

Del.quantity : 250.5...252.5 1000 : (247.5...255.5)

Aneroid pressure h: 1200

per values ____

Test pressure, bar: 17...19

BEGINNING OF DELIVERY

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 56...64

Testing:

1st rack travel in: 14.20 rpm : 950...960 Speed

2nd rack travel in: 4.00

Speed rpm : 1090...1120 4th rack travel in: 1200

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 7...15

Testing:

rpm : 275 Speed Minimum rack trave: 6.40 rpm

Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 900

Rack travel in m: 15.20...15.30

rpm : 625 2nd speed

Rack travel in m: 15.50...15.60

3rd speed rpm : 700

Rack travel in m: 15.40...15.60

4th speed rpm : 500 Rack travel in m: <15.00

Aneroid/Altitude Compensator Test

1st version

Setting

: 625 Speed rpm hPa : 1200 Pressure

Rack travel mm : 15.50...15.60

Measurement

1/min: 625 Speed

1st pressure hPa : -

Rack travel in m: 8.30...8.70
2nd pressure hPa : 280
Rack travel in m: 10.40...10.50

3rd pressure hPa : 650

Rack travel in m: 13.30...13.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 625 Del.quantity cm3/: 278.0...284.0

1000 s: (275.0...287.0)

Spread cm3 : 8.001000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 400 Del.quantity cm3/ : 130.5...134.5 1000 s: (128.5...136.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.20

rpm : 950...960 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 120.0...160.0 1000 s: (110.0...170.0)

Rack travel in mm : 8.30...8.70

LOW IDLE

rpm : 325 Speed

Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 39.0...45.0 1000 s: (37.0...47.0)

cm3 : 8.00 Spread 1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension

3.0...3.2 mm.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

: MAC 11.1 a5 : 31.10.89 Test sheet Edition : 7.2.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 746 818

Injection pump

Pump designation: PES6P120A720RS7135

EP type number : 0 412 726 807

Governor

Governor design. : RQV325...875PA848-5K

: 0 421 815 174 Governer no.

Customer-spec. information Customer : MACK

: EM6-275L 4VH Engine

1st version kW : 202.0 Rated speed : 1950

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

: 1 680 750 008 Test Lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85 : (2.70...2.90)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 875 1st speed

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 19.0...19.2

100 s: (18.7...19.5)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm: 4.6...4.8
Del.quantity cm3/: 3.7...4.3
100 s: (3.5...4.5)

cm3 : 0.8

Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

: 1.20...1.40 travel mm

rpm : 450 2nd speed : 2.80...3.10 travel mm

3rd speed rpm : 850

: 6.20...6.40 travel mm

4th speed rpm: 1000

: 7.70...7.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1110 Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 875 Speed Aneroid pressure h: 1200

Del.quantity : 190.0...192.0

1000 : (187.0...195.0)

cm3 : 5.00Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 52...60 Testing: 1st rack travel in: 11.20 Speed rpm : 925...935 2nd rack travel in: 4.00 Speed rpm: 1030...1060 4th rack travel in: 1150 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 9...17 Testing: : 275 Speed rom Minimum rack trave: 6.10 : 325 rom Rack travel in mm : 4.60...4.80 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 875 Rack travel in m: 12.20...12.30 and speed rpm : 510 Rack travel in m: 14.10...14.30 2nd speed 3rd speed rpm : 700 Rack travel in m: 13.20...13.40 4th speed rpm : 400 Rack travel in m: 0.00...13.80 Aneroid/Altitude Compensator Test 1st version Setting : 510 Speed rom hPa : 1200 Pressure : 14.10...14.30 Rack travel mm Measurement

1/min: 510 Speed 1st pressure hPa : -Rack travel in m: 9.40...9.60 2nd pressure hPa : 280 Rack travel in m: 10.60...10.70 3rd pressure hPa : 485 **B08**

Rack travel in m: 12.70...13.30 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 rpm : 510 Speed Del.quantity cm3/: 262.5...268.5

1000 s: (259.5...271.5) cm3 : 8.00Spread 1000 s: (12.0)

Aneroid pressure h: -Speed rpm : 400 Del.quantity cm3/ : 145.0...149.0 1000 s: (143.0...151.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.20 rpm : 925...935 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 170.0...210.0 1000 s: (160.0...220.0)

Rack travel in mm : 9.40...9.60

LOW IDLE

Speed rpm Rack travel in mm : 4.60...4.80 Del.quantity cm3/: 37.0...43.0 1000 s: (35.0...45.0) cm3 : 8.00 Spread 1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension 3.0...3.2 mm.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 2.75...2.85 : (2.70...2.90) Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order Test sheet Edition : MAC 11,1 a6 : 31.10.89 : 7.2.89 Replaces : ISO-4113 Phasing Test oil Combination no. : 0 402 746 819 Injection pump Pump designation : PES6P120A720RS7135 : 0 412 726 807 BASIC SETTING EP type number Governor Governor design. : RQV325...875PA848-6K 1st speed : 0 421 815 175 Governer no. Customer-spec. information : MACK Customer Engine : EM6-225L 4VH : 165.0 Spread 1st version kW : 1950 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. . C : 38...42 Overflow valve Spread : 2 417 413 011 Inlet press., bar: 1.50 with governor Test nozzle holder : 1 688 901 101 GUIDE SLEEVE TRAVEL assembly 1st speed travel mm Openina pressure, bar : 207...210 2nd speed travel mm 3rd speed Orifice plate : 0,6 travel mm diameter mm 4th speed travel mm : 1 680 750 008 Test lines Outside diameter x Wall thickness

: 6.00x2.00x600

(A) Injection pump setting values

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Insp. values in parentheses Set equal delivery quant.

: 0-60-120-180-240-300 Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 1 rbm: 875 Rack travel in mm : 11.00...11.10 Del.quantity cm3/: 15.8...16.0 100 s: (15.5...16.3) cm3 : 0.5100 s: (0.9) 2nd speed rpm : 325.0 Rack travel in mm : 4.6...4.8 Del.quantity cm3/ : 3.8...4.4 100 s: (3.6...4.6) cm3 : 0.8100 s: (1.2) (B) Setting of injection pump rpm : 325 : 1.20...1.40 rpm : 450 : 2.80...3.10 rpm : 850 : 6.20...6.40 rpm : 1000 : 7.70...7.90 GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm: 1110 Rack travel in mm: 7.00...13.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 875 Speed Aneroid pressure h: 900 Del.quantity : 158.5...160.5 1000 : (155.5...163.5)

x Length mm

Rack travel in m: 9.70...9.80 Spread cm3 : 5.003rd pressure hPa : 500 1000 : (9.00) Rack travel in m: 12.00...12.40 RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control lever position degrees: 52...60 1st version Aneroid pressure h: 900 Speed rpm Testing: Del.quantity cm3/: 234.0...240.0 1000 s: (231.0...243.0) Spread cm3 : 8.00 1st rack travel in: 10.00 Speed rpm: 925...935 2nd rack travel in: 4.00 rpm : 1015...1045 1000 s: (12.0) Speed 4th rack travel in: 1150 Aneroid pressure h: rpm : 400 rpm : 0.00...1.00Speed Speed Del.quantity cm3/: 131.0...135.0 1000 s: (129.0...137.0) LOW IDLE 1 Control lever position degrees: 9...17 BREAKAWAY Testina: rpm : 275 1st version Speed Minimum rack trave: 6.10 1mm rack travel less than rpm : 325 Rack travel in mm : 4.60...4.80 full load rack tr: 10.00 rpm : 925...935 Speed CONSTANT REGULATION rpm : 325...520 STARTING FUEL DELIVERY Speed TORQUE CONTROL rpm : 100 Dimension a mm Speed Del.quantity cm3/: 135.0...175.0 1000 s: (125.0...185.0) Torque control curve - 1st version 1st speed rpm : 875 Rack travel in mm : 8.50...8.90 Rack travel in m: 11.00...11.10 2nd speed rpm : 510 Rack travel in m: 13.20...13.40 LOW IDLE 3rd speed rpm : 600 Speed rpm : 325 Rack travel in mm : 4.60...4.80 Del.quantity cm3/ : 38.0...44.0 1000 s: (36.0...46.0) Rack travel in m: 12.50...12.70 4th speed rpm : 700 Rack travel in m: 11.80...12.00 5th speed rpm : 350 Rack travel in m: 0.00...13.20 Spread cm3 : 8.001000 s: (12.00) Aneroid/Altitude Compensator Test Remarks: Delivery-valve spring pre-tension 3.0...3.2 mm. 1st version Setting : 510 Speed rpm Setting and blocking of pointer of hPa : 900 Pressure start-of-delivery sensor on cyl. 1 : 13.20...13.40 Rack travel mm start of delivery Measurement 1/min: 510 Speed 1st pressure hPa : -Rack travel in m: 8.50...8.90 2nd pressure hPa : 220

: 2.75...2.85 : (2.70...2.90) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks Test sheet : MAC 11,1 b5 : 31.10.89 : 7.2.89 Edition Replaces : 0-60-120-180-240-300 : ISO-4113 Phasing Test oil Combination no. : 0 402 746 820 Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 1 Injection pump Pump designation : PES6P120A720RS7135 : 0 412 726 807 BASIC SETTING EP type number Governor Governor design. : RQV325...850PA878K 1st speed rpm: 850 Governer no. : 0 421 815 177 Rack travel in mm : 12.00...12.10 Customer-spec. information Del.quantity cm3/: 18.1...18.3 : MACK Customer 100 s: (17.8...18.6) Engine : E6-275 4VH : 202.0 cm3 : 0.51st version kW Spread : 1900 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rom : 325.02nd speed Rack travel in mm: 4.5...4.7 Test oil Del.quantity cm3/: 3.2...3.8 inlet temp. , C : 38...42 100 s: (3.0...4.0) cm3 : 0.8Overflow valve Spread 100 s: (1.2) : 2 417 413 011 (B) Setting of injection pump Inlet press., bar: 1.50 with governor Test nozzle holder : 1 688 901 101 GUIDE SLEEVE TRAVEL assembly rpm : 325 1st speed : 1.20...1.40 travel mm Openina rpm : 450 pressure, bar : 207...210 2nd speed : 2.80...3.10 travel mm 3rd speed rpm : 850 Orifice plate : 6.20...6.40 : 0,6 travel mm diameter mm 4th speed rpm : 1000 : 7.70...7.90 travel mm Test lines : 1 680 750 008 GUIDE SLEEVE POSITION Control-lever position Outside diameter x Wall thickness Degree: -1 rpm : 1110 x Length mm : 6.00x2.00x600 Speed Rack travel in mm : 7.00...13.00 (A) Injection pump setting values FULL LOAD DELIV. AT FULL LOAD STOP Insp. values in parentheses Set equal delivery quant. 1st version per values ____ Speed rpm : 850

Aneroid pressure h: 900

Del.quantity : 181.0...183.0 1000 : (178.0...186.0)

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

cm3 : 5.00 1000 : (9.00) cm3 Spread

RATED SPEED

1st version Control lever

position degrees: 52...60

Testing:

1st rack travel in: 11.00 rpm : 900...910 Speed 2nd rack travel in: 4.00

rpm : 1025...1055 Speed

4th rack travel in: 1150

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 7...15

Testing:

: 275 Speed rom Minimum rack trave: 6.00 : 325 rom

Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve – 1st version

1st speed rpm : 850

Rack travel in m: 12.00...12.10

: 600 rpm 2nd speed

Rack travel in m: 12.60...12.70

3rd speed : 700 rpm

Rack travel in m: 12.50...12.70

4th speed rpm : 500

Rack travel in m: 0.00...12.40

Aneroid/Altitude

Compensator Test

1st version

Setting

: 600 Speed rpm hPa : 900 Pressure

: 12.60...12.70 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 9.50...9.90

2nd pressure hPa : 215 Rack travel in m: 10.30...10.40

3rd pressure hPa : 360

Rack travel in m: 11.50...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 600

Del.quantity cm3/: 210.5...216.5 1000 s: (207.5...219.5)

cm3 : 8.00 1000 s: (12.0) Spread

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 144.0...148.0 1000 s: (142.0...150.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.00

rpm : 900...910 Speed

STARTING FUEL DELIVERY

: 100 Speed rom

Del.quantity cm3/: 160.0...200.0 1000 s: (150.0...210.0)

Rack travel in mm : 9.50...9.90

LOW IDLE

Speed rpm

Rack travel in mm : 4.50...4.70

Del.quantity cm3/: 32.0...38.0 1000 s: (30.0...40.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension 3.0...3.2 mm.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: MAC 11.1 b : 31.10.89 : 7.2.89 Test sheet Edition Replaces : ISO-4113 Test oil

Combination no. : 0 402 746 821

Injection pump

Pump designation : PES6P120A720RS7135 EP type number : 0 412 726 807

Governor

Governor design. : RQV325...850PA878-1K

Governer no. : 0 421 815 178

Customer-spec. information Customer : MACK

: E6-300 4VH Engine

: 224.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85 : (2.70...2.90)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 20.0...20.2

100 s: (19.7...20.5)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm : 4.5...4.7 Del.quantity cm3/: 3.2...3.8 100 s: (3.0...4.0)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 325 : 1.20...1.40 travel mm rpm : 450

2nd speed : 2.80...3.10 travel mm

rpm : 850 3rd speed

travel mm : 6.20...6.40

rpm : 1000 4th speed

: 7.70...7.90 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1100 Speed

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed

Aneroid pressure h: 900

Del.quantity : 200.5...205.5)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 52...60

Testing:

1st rack travel in: 11.90 Speed rpm: 900...910 2nd rack travel in: 4.00

rpm : 1025...1055 Speed

4th rack travel in: 1100

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 7...15

Testina:

: 275 Speed rpm Minimum rack trave: 6.00 : 325 Speed

Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rom : 850

Rack travel in m: 12.90...13.00

: 700 2nd speed rpm

Rack travel in m: 13.30...13.50

3rd speed rpm : 600

Rack travel in m: 13.50...13.70 th speed rpm : 500

4th speed rpm

Rack travel in m: 0.00...13.10

Aneroid/Altitude Compensator Test

1st version Setting

: 600 Speed rpm Pressure hPa : 900

: 13.50...13.70 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -Rack travel in m: 9.90...10.30

2nd pressure hPa : 250

Rack travel in m: 10.90...11.00

3rd pressure hPa : 475

Rack travel in m: 12.60...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

: 700 Speed rom

Del.quantity cm3/: 217.0...223.0 1000 s: (214.0...226.0)

Aneroid pressure h: 900

Speed rpm

Del.quantity cm3/: 233.0...239.0 1000 s: (230.0...242.0)

cm3 : 8.00Spread 1000 s: (12.0)

Aneroid pressure h: -

rpm : 400 Speed Del.quantity cm3/: 154.0...158.0 1000 s: (152.0...160.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90

rpm : 900...910 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 195.0...235.0

1000 s: (185.0...245.0)

Rack travel in mm : 9.90...10.30

LOW IDLE

: 325 Speed rpm

Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 32.0...38.0

1000 s: (30.0...40.0) cm3 : 8.00

Spread 1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension 3.0...3.2 mm.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

: 2.75...2.85 : (2.70...2.90) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order Test sheet : MAC 11,1 b1 : 31.10.89 : 7.2.89 Edition Replaces : 0-60-120-180-240-300 : ISO-4113 Test oil Phasing Combination no. : 0 402 746 822 Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 1 Injection pump Pump designation : PES6P120A720RS7135 : 0 412 726 807 BASIC SETTING EP type number Governor Governor design. : RQV325...900PA878-2K 1st speed rom: 900 : 0 421 815 179 Governer no. Rack travel in mm : 13.90...14.00 Customer-spec. information Del.quantity cm3/: 23.6...23.8 : MACK Customer 100 s: (23.3...24.1) Enaine : E6-350 4VH cm3 : 0.51st version kW : 261.0 Spread : 1800 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 325.0 2nd speed Rack travel in mm: 4.0...4.2 Test oil Del.quantity cm3/: 3.2...3.8 inlet temp. ... C : 38...42 100 s: (3.0...4.0) cm3 : 0.8Spread Overflow valve 100 s: (1.2) : 2 417 413 011 (B) Setting of injection pump Inlet press., bar: 1.50 with governor Test nozzle holder : 1 688 901 101 assembly GUIDE SLEEVE TRAVEL 1st speed rpm : 325 : 1.20...1.40 Openina travel mm : 207...210 rpm : 450 pressure, bar 2nd speed : 3.10...3.30 travel mm 3rd speed rpm : 850 Orifice plate : 5.90...6.10 rpm : 1000 diameter mm : 0,6 travel mm 4th speed : 7.50...7.70 travel mm Test lines : 1 680 750 008 GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: -1 Speed rpm: 1130 Rack travel in mm: 7.00...13.00 : 6.00x2.00x600 x Length mm (A) Injection pump setting values FULL LOAD DELIV. AT FULL LOAD STOP Insp. values in parentheses Set equal delivery quant. per values _ 1st version

rpm : 900

Del.quantity : 230.3...241.5)

Aneroid pressure h: 900

Speed

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

cm3 : 5.00 Spread 1000 : (9.00)RATED SPEED 1st version Control Lever position degrees: 55...63 Testina: 1st rack travel in: 12.90 rpm : 950...960 Speed 2nd rack travel in: 4.00 rpm : 1075...1105 Speed 4th rack travel in: 1150 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 7...15 Testing: Speed rpm : 275 Minimum rack trave: 5.50 rpm Rack travel in mm : 4.00...4.20 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version : 900 1st speed rpm Rack travel in m: 13.90...14.00 2nd speed rom : 625 Rack travel in m: 14.10...14.20 3rd speed rpm: 800 Rack travel in m: 14.00...14.10 4th speed rpm : 500 Rack travel in m: 0.00...13.50 : 500 Aneroid/Altitude Compensator Test 1st version Setting Speed man hPa : 900 Pressure : 14.10...14.20 Rack travel mm Measurement

Speed 1/min: 625 1st pressure hPa : -Rack travel in m: 8.50...8.90 2nd pressure hPa : 275 Rack travel in m: 10.00...10.10 3rd pressure hPa : 570 **B16**

Rack travel in m: 12.30...12.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 Speed rpm : 625 Del.quantity cm3/ : 257.0...263.0 1000 s: (254.0...266.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: rpm : 400 Speed Del.quantity cm3/: 142.0...146.0 1000 s: (140.0...148.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.90 rpm : 950...960 Speed

Speed : 100 rpm

STARTING FUEL DELIVERY

Del.quantity cm3/: 170.0...210.0 1000 s: (160.0...220.0)

Rack travel in mm : 8.50...8.90

LOW IDLE

Speed rpm : 325 Rack travel in mm : 4.00...4.20

Del.quantity cm3/: 32.0...38.0 1000 s: (30.0...40.0)

cm3 : 8.00 Spread 1000 s: (12,00)

Remarks:

Delivery-valve spring pre-tension 3.0...3.2 mm.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Prestroke mm : 2.75...2.85 : (2.70...2.90) Rack travel in mm : 9.00...12.00 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Firing order : 1 - 5 - 3 - 6 - 2 - 4: MAC 11.1 b2 : 31.10.89 : 7.2.89 Test sheet Edition Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 746 823 Tolerance + - ... : 0.50 (0.75)Injection pump Time to cyl. no. : 1 Pump designation : PES6P120A720RS7135 : 0 412 726 807 BASIC SETTING EP type number Governor Governor design. : RQV325...875PA878-3K 1st speed rpm: 875 : 0 421 815 180 Governer no. Rack travel in mm : 12.20...12.30 Customer-spec. information Del.quantity cm3/: 19.0...19.2 : MACK Customer : EM6-275L 4VH 100 s: (18.7...19.5) Engine 1st version kW : 202.0 cm3 : 0.5Spread : 1950 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 325.0 Test oil Rack travel in mm: 4.6...4.8 Del.quantity cm3/: 3.7...4.3 100 s: (3.5...4.5) Spread cm3 : 0.8 inlet temp.,, C : 38...42 Overflow valve : 2 417 413 011 100 s: (1.2) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder assembly : 1 688 901 101 GUIDE SLEEVE TRAVEL 1st speed rpm : 325 travel mm : 1.20...1.40 Opening pressure, bar : 207...210 2nd speed rpm : 450 : 2.80...3.10 travel mm 3rd speed rpm: 850 Orifice plate : 0,6 : 6.20...6.40 diameter mm travel mm 4th speed rpm: 1000 : 7.70...7.90 travel mm : 1 680 750 008 Test lines GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: -1 : 6.00x2.00x600 rpm : 1110 x Length mm Speed Rack travel in mm : 7.00...13.00 (A) Injection pump setting values Insp. values in parentheses FULL LOAD DELIV. AT FULL LOAD STOP Set equal delivery quant. per values ____ 1st version Speed rpm : 875 Aneroid pressure h: 1200 BEGINNING OF DELIVERY

Del.quantity : 190.0...192.0 1000 : (187.0...195.0)

Test pressure, bar: 17...19

: 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 52...60 Testina: 1st rack travel in: 11.20 Speed rpm: 925...935 2nd rack travel in: 4.00 rpm : 1030...1060 Speed 4th rack travel in: 1150 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 9...17 Testina: : 275 Speed rpm Minimum rack trave: 1.50 rpm : 325 Speed Rack travel in mm : 4.60...4.80 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 875 Rack travel in m: 12.20...12.30 and speed rpm : 510 Rack travel in m: 14.10...14.30 2nd speed rpm : 700 3rd speed Rack travel in m: 13.20...13.40 4th speed rpm : 400 Rack travel in m: 0.00...13.80 Aneroid/Altitude Compensator Test 1st version Setting : 510 Speed rom hPa : 1200 Pressure : 14.10...14.30 Rack travel mm

Measurement 1/min: 510 Speed

1st pressure hPa : -Rack travel in m: 9.40...9.60 2nd pressure hPa : 280 Rack travel in m: 10.60...10.70

3rd pressure hPa : 485

Rack travel in m: 12.70...13.30

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1200 510 Speed rpm

Del.quantity cm3/: 262.5...268.5 1000 s: (259.5...271.5)

cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 145.0...149.0 1000 s: (143.0...151.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.20 rpm : 925...935 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 170.0...210.0 1000 s: (160.0...220.0)

Rack travel in mm : 9.40...9.60

LOW IDLE

: 325 Speed rpm

Rack travel in mm : 4.60...4.80 Del.quantity cm3/: 37.0...43.0 1000 s: (35.0...45.0)

cm3 : 8.00Spread 1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension 3.0...3.2 mm.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Prestroke mm : 2.75...2.85 : (2.70...2.90) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 BOSCH IN.L. PUMP TEST SPECIFICATIONS Note remarks : MAC 11,1 b3 Test sheet : 31.10.89 Edition : 7.2.89 Replaces Test oil : 0-60-120-180-240-300 : ISO-4113 Phasing Combination no. : 0 402 746 824 Time to cyl. no. : 1 Injection pump Pump designation : PES6P120A720RS7135 EP type number : 0 412 726 807 BASIC SETTING Governor rpm: 875 Governor design. : RQV325...875PA878-4K 1st speed : 0 421 815 181 Governer no. Rack travel in mm : 11.00...11.10 Customer-spec. information Del.quantity cm3/: 15.8...16.0 Customer : MACK 100 s: (15.5...16.3) : EM6-225L 4VH Engine : 165.0 Spread cm3 : 0.51st version kW : 1950 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 325.0 2nd speed Rack travel in mm: 4.6...4.8 Test oil Del.quantity cm3/ : 3.8...4.4 inlet temp. ., C . : 38...42 100 s: (3.6...4.6) cm3 : 0.8Overflow valve Spread : 2 417 413 011 100 s: (1.2) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 101 GUIDE SLEEVE TRAVEL assembly 1st speed rpm: 325 travel mm : 1.20...1.40 **Opening** pressure, bar : 207...210 2nd speed rpm: 450 travel mm : 2.80...3.10
3rd speed rpm : 850 Orifice plate : 6.20...6.40 diameter mm : 0,6 travel mm 4th speed rpm : 1000 : 7.70...7.90 travel mm : 1 680 750 008 Test lines GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: -1 : 6.00X2.00X600 x Length mm

Speed rpm: 1110 Rack travel in mm: 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rbm : 875 Aneroid pressure h: 900

Del.quantity : 158.5...160.5 1000 : (155.5...163.5)

Test pressure, bar: 17...19

per values ____

BEGINNING OF DELIVERY

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

Rack travel in m: 9.70...9.80 cm3 : 5.00Spread 1000 : (9.00) 3rd pressure hPa : 500 Rack travel in m: 12.00...12.40 RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control lever position degrees: 52...60 1st version Aneroid pressure h: 900 : 510 Speed rpm Testing: Del.quantity cm3/: 234.0...240.0 1000 s: (231.0...243.0) 1st rack travel in: 10.00 rpm : 925...935 Speed 2nd rack travel in: 4.00 cm3 : 8.00Spread Speed rpm : 1015...1045 4th rack travel in: 1150 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 400 Del.quantity cm3/: 131.0...135.0 Speed rpm : 0.00...1.00 1000 s: (129.0...137.0) LOW IDLE 1 Control lever position degrees: 9...17 BREAKAWAY Testing: Speed : 275 1st version rpm Minimum rack trave: 6.10 1mm rack travel less than : 325 rpm Rack travel in mm : 4.60...4.80 full load rack tr: 10.00 rpm : 925...935 Speed CONSTANT REGULATION rpm : 325...520 STARTING FUEL DELIVERY Speed TORQUE CONTROL Speed rpm : 100 Del.quantity cm3/ : 135.0...175.0 Dimension a mm Torque control curve - 1st version 1000 s: (125.0...185.0) 1st speed rpm : 875 Rack travel in m: 11.00...11.10 Rack travel in mm : 8.50...8.90 2nd speed rpm : 510 Rack travel in m: 13.20...13.40 LOW IDLE : 600 3rd speed rpm Rack travel in m: 12.50...12.70 rpm : 325 Speed Rack travel in mm : 4.60...4.80 4th speed : 700 rpm Del.quantity cm3/: 38.0...44.0 Rack travel in m: 11.80...12.00 1000 s: (36.0...46.0) 5th speed rpm : 350 cm3 : 8.00 Rack travel in m: 0.00...13.20 Spread 1000 s: (12.00) Aneroid/Altitude Compensator Test Remarks: Delivery-valve spring pre-tension 3.0...3.2 mm. 1st version Setting : 510 Speed rpm hPa : 900 Setting and blocking of pointer of Pressure start-of-delivery sensor on cyl. 1 : 13.20...13.40 Rack travel mm start of delivery Measurement 1/min: 510 Speed 1st pressure hPa : Rack travel in m: 8.50...8.90

2nd pressure hPa : 220

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MAC 11,1 b6 : 31.10.89 : 29.3.89 Test sheet Edition Replaces Test oil : ISO-4113 Combination no. : 0 402 746 825 Injection pump Pump designation : PES6P120A720RS7135 EP type number : 0 412 726 807 Governor Governor design. : RQV325...900PA878-5K Governer no. : 0 421 815 182 Customer-spec. information Customer : MACK : EC6-350 4VH Engine : 261.0 1st version kW : 1800 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. , C . : 38...42 Overflow valve : 2 417 413 011 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 101 assembly **Opening** : 207...210 pressure, bar Orifice plate diameter mm : 0,6 Test lines : 1 680 750 008 Outside diameter x Wall thickness : 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Phasing : 0-60-120-180-240-300 Time to cyl. no. : 1 BASIC SETTING rpm: 900 1st speed Rack travel in mm : 15.20...15.30 Del.quantity cm3/: 25.0...25.2 100 s: (24.7...25.5) Spread cm3 : 0.5100 s: (0.9) rpm : 325.0 2nd speed Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 3.9...4.5 100 s: (3.7...4.7) cm3 : 0.8Spread 100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed : 1.20...1.40 travel mm 2nd speed rpm : 450 : 3.10...3.30 travel mm rpm : 850 3rd speed : 5.90...6.10 travel mm rpm : 1000 4th speed : 7.50...7.70 travel mm GUIDE SLEEVE POSITION Control-Lever position Degree: -1 Speed rpm: 1130 Rack travel in mm: 7.00...13.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 900 Aneroid pressure h: 1200

Del.quantity : 250.3...255.5)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 56...64

Testing:

1st rack travel in: 14.20 rpm : 950...960 Speed

2nd rack travel in: 4.00

Speed rpm : 1090...1120 4th rack travel in: 1200

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 7...15

Testing:

Speed rpm : 275 Minimum rack trave: 6.40

rpm

Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Torque control curve - 1st version

rpm : 900 1st speed

Rack travel in m: 15.20...15.30

rpm : 625 2nd speed

Rack travel in m: 15.50...15.60

rpm : 700 3rd speed

Rack travel in m: 15.40...15.60

4th speed rpm : 500

Rack travel in m: <15.00

Aneroid/Altitude Compensator Test

1st version

Settina

: 625 Speed rpm hPa : 1200 Pressure

: 15.50...15.60 Rack travel mm

Measurement

Speed 1/min: 625

1st pressure hPa : -

Rack travel in m: 8.30...8.70
2nd pressure hPa : 280
Rack travel in m: 10.40...10.50

3rd pressure hPa : 650

Rack travel in m: 13.30...13.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 625 Del.quantity cm3/: 278.0...284.0 1000 s: (275.0...287.0)

cm3 : 8.00Spread

1000 s: (12.0)

Aneroid pressure h: -

rpm : 400 Speed

Del.quantity cm3/: 130.5...134.5 1000 s: (128.5...136.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.20

rpm : 950...960 Speed

STARTING FUEL DELIVERY

rpm_ : 100

Del.quantity cm3/: 120.0...160.0 1000 s: (110.0...170.0)

Rack travel in mm : 8.30...8.70

LOW IDLE

Speed rpm: 325 Rack travel in mm: 4.90...5.10

Del.quantity cm3/: 39.0...45.0 1000 s: (37.0...47.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension 3.0...3.2 mm.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

: 2.75...2.85 : (2.70...2.90) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks Test sheet : MAC 11,1 b4 : 31.10.89 : 7.2.89 Edition Replaces Test oil : 0-60-120-180-240-300 : ISO-4113 Phasing Combination no. : 0 402 746 826 Tolerance + - ... : 0.50 (0.75)Injection pump Time to cyl. no. : 1 Pump designation : PES6P120A720RS7135 EP type number : 0 412 726 807 BASIC SETTING Governor Governor design. : RQV325...875PA878-6K rpm: 875 1st speed : 0 421 815 183 Governer no. Rack travel in mm : 10.80...10.90 Customer-spec. information : MACK Del.quantity cm3/: 16.3...16.5 Customer 100 s: (16.0...16.8) : EM6-250L 4VH Engine Spread cm3 : 0.51st version kW : 186.0 : 1950 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 325.0 2nd speed Rack travel in mm : 4.5...4.7 Del.quantity cm3/ : 3.9...4.5 Test oil inlet temp..., C : 38...42 100 s: (3.7...4.7) cm3 : 0.8Overflow valve Spread : 2 417 413 011 100 s: (1.2) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder assembly : 1 688 901 101 GUIDE SLEEVE TRAVEL 1st speed rpm : 325 : 1.20...1.40 travel mm Opening pressure, bar : 207...210 2nd speed rpm : 450 travel mm : 2.80...3.20 3rd speed rpm: 850 Orifice plate : 6.20...6.40 : 0,6 travel mm diameter mm 4th speed rpm: 1000 : 7.70...7.90 travel mm Test Lines : 1 680 750 008 GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: -1 Speed rpm : 1100 Rack travel in mm : 7.00...13.00 : 6.00X2.00X600 x Length mm (A) Injection pump setting values

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 875 Speed Aneroid pressure h: 1200

Del.quantity : 163.0...165.0 1000 : (160.0...168.0)

Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

cm3 : 5.00 Spread 1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 52...60

Testina:

1st rack travel in: 9.80 Speed rpm : 925...935 2nd rack travel in: 4.00

rpm : 1010...1040 Speed

4th rack travel in: 1100

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 9...17

Testing:

: 275 Speed rpm Minimum rack trave: 6.00 : 325 Speed rpm

Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

1st speed rpm : 875 Rack travel in m: 10.80...10.90

2nd speed

nd speed rpm : 510 Rack travel in m: 13.00...13.20

3rd speed rpm : 700

Rack travel in m: 11.60...11.80

4th speed rpm : 550

Rack travel in m: 0.00...13.10

Aneroid/Altitude

Compensator Test

1st version

Setting

: 510 Speed rom hPa : 1200 Pressure

: 13.00...13.20 Rack travel mm

Measurement

Speed 1/min: 510

1st pressure hPa : -

Rack travel in m: 8.60...9.00 2nd pressure hPa : 215 Rack travel in m: 10.30...10.40

3rd pressure hPa : 435

Rack travel in m: 12.20...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 510 Speed rpm

Del.quantity cm3/: 240.0...246.0 1000 s: (237.0...249.0)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 146.0...150.0

1000 s: (144.0...152.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.80

Speed rpm : 925...935

STARTING FUEL DELIVERY

: 100 Speed rom

Del.quantity cm3/: 145.0...185.0

1000 s: (135.0...195.0)

Rack travel in mm : 8.60...9.00

LOW IDLE

Speed rpm : 325 Rack travel in mm : 4.50...4.70

Del.quantity cm3/: 39.0...45.0 1000 s: (37.0...47.0)

cm3 : 8.00 Spread

1000 s: (12.00)

:

Remarks:

Delivery-valve spring pre-tension

3.0...3.2 mm.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: MAC 11,1 c : 31.10.89 Test sheet Edition Replaces : 7.2.89 Test oil : ISO-4113

Combination no. : 0 402 746 827

Injection pump

Pump designation : PES6P120A720RS7148 EP type number : 0 412 726 810

Governor

Governor design. : RQV325...875PA848-7K

: 0 421 815 176 Governer no.

Customer-spec. information Customer : MACK

Engine : EM6 300L 4VH

: 224.0 1st version kW : 1950 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 Prestroke mm : (2.70...2.90)

Rack travel in mm : 6.00...8.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 875 1st speed

Rack travel in mm : 11.10...11.20

Del.guantity cm3/: 19.9...20.1

100 s: (19.6...20.4)

cm3 : 0.5 Spread

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm : 4.5...4.7 Del.quantity cm3/: 3.9...4.5 100 s: (3.7...4.7)

Spread

cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 325 : 1.20...1.40 travel mm rpm : 450 2nd speed

: 2.50...2.80 travel mm

rpm : 600 3rd speed

travel mm : 4.10...4.30

rpm : 875 4th speed

: 7.30...7.50 travel mm

rpm : 1000 5th speed

: 8.70...9.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1040

Rack travel in mm : 6.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 875 Speed Aneroid pressure h: 1500

: 199.0...201.0 1000 : (196.0...204.0) Del.quantity : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 55...63 Testing: 1st rack travel in: 10.10 rpm : 915...925 Speed 2nd rack travel in: 4.00 Speed rpm: 1000...1030 4th rack travel in: 1150 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 7...15 Testina: Speed rpm : 275 Minimum rack trave: 6.00 man Rack travel in mm : 4.50...4.70 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version rpm : 875 1st speed Rack travel in m: 11.10...11.20 2nd speed rpm: 510
Rack travel in m: 16.50...16.70
3rd speed rpm: 700 Rack travel in m: 13.30...13.50 rpm : 600 4th speed Rack travel in m: 15.50...15.70 5th speed rpm : 450 Rack travel in m: 0.00...16.60 Aneroid/Altitude Compensator Test 1st version Setting : 510 Speed rpm hPa : 1500 Pressure : 16.50...16.70 Rack travel mm Measurement 1/min: 510

Rack travel in m: 8.30...8.70 2nd pressure hPa : 370 Rack travel in m: 10.70...10.80 3rd pressure hPa : 710 Rack travel in m: 14.40...14.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 Speed : 510 rpm Del.quantity cm3/: 299.0...305.0 1000 s: (296.0...308.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 400 Speed Del.quantity cm3/: 152.5...156.5 1000 s: (150.5...158.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.10 rpm : 915...925 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 140.0...160.0 1000 s: (135.0...165.0) Rack travel in mm : 8.30...8.70 LOW IDLE Speed rpm : 325 Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 39.0...45.0 1000 s: (37.0...47.0) Spread cm3 : 8.00 1000 s: (12.00) Remarks: Delivery-valve spring pre-tension 3.0...3.2 mm. Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Speed

1st pressure hPa : -

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MAC 11,1 d : 31.10.89 : 7.2.89 Edition Replaces : ISO-4113 Test oil Combination no. : 0 402 746 828 Injection pump Pump designation : PES6P120A720RS7148 : 0 412 726 810 EP type number Governor Governor design. : RQV325...875PA878-7K : 0 421 815 184 Governer no. Customer-spec. information Customer : MACK : EM6 300L 4VH Engine : 224.0 1st version kW : 1950 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. ., C : 38...42 Overflow valve : 2 417 413 011 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 101 assembly Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,6 Test lines : 1 680 750 008

: 6.00X2.00X600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

: 2.75...2.85 : (2.70...2.90) Rack travel in mm : 6.00...8.00 : 1-5-3-6-2-4 Firina order : 0-60-120-180-240-300 Phasing Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 875 Rack travel in mm : 11.10...11.20 Del.quantity cm3/: 19.9...20.1 100 s: (19.6...20.4) cm3 : 0.5Spread 100 s: (0.9) rpm : 325.02nd speed Rack travel in mm: 4.5...4.7 Del.quantity cm3/: 3.9...4.5 100 s: (3.7...4.7) cm3 : 0.8 100 s: (1.2) Spread (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 325 : 1.20...1.40 1st speed travel mm rpm : 450 2nd speed travel mm : 2.50...2.80 3rd speed rpm : 600 : 4.10...4.30 travel mm rpm : 875 : 7.30...7.50 4th speed travel mm rpm : 1000 5th speed : 8.70...9.00 travel mm GUIDE SLEEVE POSITION Control-Lever position Degree: -1 rpm : 1040 Speed Rack travel in mm : 6.00...12.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rom : 875

Aneroid pressure h: 1500

Prestroke mm

Outside diameter x Wall thickness

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

x Length mm

Del.quantity : 199.0...201.0 1000 : (196.0...204.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 55...63 Testing: 1st rack travel in: 10.10 Speed rpm : 915...925 2nd rack travel in: 4.00 rpm : 1000...1030 4th rack travel in: 1150 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 7...15 Testing: Speed rpm : 275 Minimum rack trave: 6.00 Speed rpm: 325 Rack travel in mm: 4.50...4.70 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version : 875 1st speed rom Rack travel in m: 11.10...11.20 2nd speed rpm : 510 Rack travel in m: 16.50...16.70 3rd speed rpm : 700 Rack travel in m: 13.30...13.50 4th speed rpm : 600 Rack travel in m: 15.50...15.70 : 450 5th speed rpm Rack travel in m: 0.00...16.60 Aneroid/Altitude Compensator Test 1st version Setting : 510 Speed rpm hPa : 1500 Pressure : 16.50...16.70 Rack travel mm Measurement $1/\min : 510$ Speed

Rack travel in m: 8.30...8.70 2nd pressure hPa : 370 Rack travel in m: 10.70...10.80 3rd pressure hPa : 710 Rack travel in m: 14.40...14.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 Speed rpm : 510
Del.quantity cm3/: 299.0...305.0
1000 s: (296.0...308.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 400 Del.quantity cm3/: 152.5...156.5 1000 s: (150.5...158.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.10 rpm : 915...925 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (135.0...165.0) Rack travel in mm : 8.30...8.70 LOW IDLE Speed rpm : 325 Rack travel in mm : 4.50...4.70 Del.quantity cm3/ : 39.0...45.0 1000 s: (37.0...47.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks: Delivery-valve spring pre-tension 3.0...3.2 mm. Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

1st pressure hPa : -

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MAC 11.1 a7 : 30.10.89 : 7.2.89 Test sheet Edition Replaces Test oil : ISO-4113 Phasing : 0 402 746 829 Combination no. Injection pump Pump designation : PES6P120A720RS7135 : 0 412 726 807 EP type number BASIC SETTING Governor Governor design. : RQV325...1050PA848-8 1st speed : 0 421 815 185 Governer no. Customer-spec. information : MACK Customer : E6-270 4VH Engine : 201.0 Spread 1st version kW : 2100 Rated speed TEST BENCH REQUIREMENTS 2nd speed Test oil inlet temp. _, C . : 38...42 Overflow valve Spread : 2 417 413 011 Inlet press., bar: 1.50 with governor Test nozzle holder : 1 688 901 101 assembly 1st speed Openina travel mm 2nd speed : 207...210 pressure, bar rpm travel mm 3rd speed Orifice plate rpm travel mm diameter mm : 0,6 4th speed rpm travel mm Test lines : 1 680 750 008 5th speed rpm travel mm Outside diameter x Wall thickness x Length mm : 6.00X2.00X600

Prestroke mm : 2.75...2.85 : (2.70...2.90) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 : 0-60-120-180-240-300 Time to cyl. no. : 1 rpm: 1050 Rack travel in mm : 12.20...12.30 Del.quantity cm3/: 17.4...17.6 100 s: (17.1...17.9) cm3 : 0.5100 s: (0.9) rpm : 325.0 Rack travel in mm : 4.9...5.1 Del.quantity cm3/: 3.8...4.4 100 s: (3.6...4.6) cm3 : 0.8100 s: (1.2) (B) Setting of injection pump GUIDE SLEEVE TRAVEL rpm : 325 : 1.40...1.60 : 450 2.50...2.80 : 800 : 4.80...5.00 : 1050 : 7.30...7.60 : 1200 : 9.40...9.60 GUIDE SLEEVE POSITION Control-Lever position Degree: -1 rpm : 1210 Speed Rack travel in mm : 7.00...13.00 FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1050

(A) Injection pump setting values

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Insp. values in parentheses Set equal delivery quant.

Aneroid pressure h: 900 : 174.0...176.0 Del.quantity 1000 : (171.0...179.0) : 5.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 55...63 Testina: 1st rack travel in: 11.20 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 Speed rpm: 1170...1200 4th rack travel in: 1300 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 10...18 Testing: : 275 Speed rpm Minimum rack trave: 6.40 : 325 rpm Rack travel in mm : 4.90...5.10 CONSTANT REGULATION rpm : 325...600 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 12.20...12.30 nd speed rpm : 630 Rack travel in m: 12.00...12.20 2nd speed rpm : 925 3rd speed Rack travel in m: 11.90...12.10 4th speed rpm : 800 Rack travel in m: 12.20...12.40 Aneroid/Altitude Compensator Test 1st version Setting : 630 Speed rpm hPa : 900 Pressure Rack travel mm : 12.00...12.10

Measurement Speed $1/\min : 630$ 1st pressure hPa : -Rack travel in m: 8.60...9.00

2nd pressure hPa : 270 Rack travel in m: 9.60...9.70 3rd pressure hPa : 400 Rack travel in m: 11.00...11.50 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 Speed rpm : 630 Del.quantity cm3/: 192.0...198.0 1000 s: (189.0...201.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 400 Del.quantity cm3/: 129.0...133.0 1000 s: (127.0...135.0) **BREAKAWAY** 1st version 1mm rack travel less tham full load rack tr: 11.20 rpm : 1090...1100 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 135.0...175.0 1000 s: (125.0...185.0) Rack travel in mm : 8.60...9.00 LOW IDLE Speed rpm : 325 Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 38.0...44.0 1000 s: (36.0...46.0) cm3 : 8.00Spread 1000 s: (12.00) Remarks:

Delivery-valve spring pre-tension 3.0...3.2 mm.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1a10 : 30.10.89 : 7.10.88 Edition Replaces : ISO-4113 Test oil

Combination no. : 0 402 746 831

Injection pump

Pump designation : PES6P120A720RS7135 EP type number : 0 412 726 807

Governor

Governor design. : RQV325...1050PA848-9

: 0 421 815 187 Governer no.

Customer-spec. information Customer : MACK

: EM6 300 2VH Engine

: 224.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

assembly : 9 688 901 101

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test Lines

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 10.30...10.70 Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 19.9...20.1

100 s: (19.6...20.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0 Rack travel in mm: 4.8...5.0 Del.quantity cm3/: 3.8...4.4 100 s: (3.6...4.6)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

: 1.40...1.60 travel mm

2nd speed rpm : 450

: 2.50...2.80 travel mm

rpm : 800 3rd speed

: 4,80...5.00 travel mm

: 1050 4th speed rpm

: 7.30...7.60 travel mm

: 1200 5th speed rpm

: 9.40...9.60 travel mm

GUIDE SLEEVE POSITION

Control-Lever position

Degree: -1 rpm : 1200 Speed

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050Speed

Aneroid pressure h: 900 Anerow P. Del.quantity 1000 : 199.0...201.0 €m3 : 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 56...64 Testing: 1st rack travel in: 11.90 : 1090...1100 Speed rpm 2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1300 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 10...18 Testing: Speed rpm : 275 Minimum rack trave: 6.30 Speed rpm : 325 Rack travel in mm : 4.80...5.00 CONSTANT REGULATION rpm : 325...600 Speed TORQUE CONTROL Torque control curve - 1st version rt speed rpm : 1050
Rack travel in m: 12.90...13.00
ad speed rpm : 630 1st speed 2nd speed Rack travel in m: 13.00...13.10 : 500 3rd speed rpm Rack travel in m: 0.00...12.60 Aneroid/Altitude Compensator Test 1st version Setting : 630 Speed rpm Pressure hPa : 900 Rack travel mm : 13.00...13.10 Measurement Speed $1/\min : 630$

Rack travel in m: 9.10...9.20

3rd pressure hPa : 410

: (196.0...204.0) 1st pressure hPa : -Rack travel in m: 7.80...8.20 2nd pressure hPa : 190

Rack travel in m: 11.40...11.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 : 630 Speed rpm Del.guantity cm3/: 213.0...219.0 1000 s: (210.0...222.0) cm3 : 8.00Spread 1000 s: (12.0) rpm : 400 Speed Del.quantity cm3/: 121.0...125.0 1000 s: (119.0...127.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.90 rpm : 1090...1100 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 110.0...150.0 1000 s: (100.0...160.0) Rack travel in mm: 7.80...8.20 LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.80...5.00
Del.quantity cm3/: 38.0...44.0
1000 s: (36.0...46.0) cm3 : 8.00Spread 1000 s: (12.00)

Remarks:

Because of flattening, set the spring preload on new delivery-valve holders to 3.0...3.1 mm.

APPLICATION

Omnibus

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MAC 11,1 a8 Test sheet : 30.10.89 Edition : 10.2.88 Replaces Test oil : ISO-4113 : 0 402 746 832 Combination no. Injection pump Pump designation : PES6P120A720RS7135 : 0 412 726 807 EP type number Governor Governor design. : RQV325...900PA848-10 : 0 421 815 189 Governer no. Customer—spec. information Customer : MACK : EM6 275 2VH Engine : 202.0 1st version kW : 1800 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. . C : 38...42 Overflow valve : 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values _

BEGINNING OF DELIVERY Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 12.30...12.40

Del.guantity cm3/: 18.7...18.9

100 s: (18.4...19.2)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm : 4.6...4.8 Del.quantity cm3/ : 3.7...4.3

100 s: (3.5...4.5)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL rpm : 325 1st speed

: 1.20...1.40 travel mm

rpm : 450 2nd speed travel mm

: 3.10...3.30 : 850

3rd speed rpm travel mm

: 5.90...6.10

: 1000 4th speed rpm

: 7.50...7.70 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1120

Speed Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed Aneroid pressure h: 900

Del.quantity : 187.0...192.0) : 5.00 cm3 Spread : (9.00) 1000 RATED SPEED 1st version Control lever position degrees: 51...59 Testing: 1st rack travel in: 11.30 rpm : 950...960 Speed 2nd rack travel in: 4.00 rpm : 1055...1085 Speed 4th rack travel in: 1150 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 9...17 Testing: Speed rpm : 275 Minimum rack trave: 6.10 Speed rpm: 325 Rack travel in mm: 4.60...4.80 CONSTANT REGULATION rpm : 325...480 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version : 900 1st speed rpm Rack travel in m: 12.30...12.40 2nd speed rpm : 540 Rack travel in m: 13.40...13.60 3rd speed rpm : 700 Rack travel in m: 12.70...12.90 th speed rpm : 450 4th speed rpm Rack travel in m: 0.00...13.50 Aneroid/Altitude Compensator Test 1st version Setting beea rpm : 540 hPa : 900 Pressure Rack travel mm : 13.40...13.60 Measurement 1/min: 540 Speed 1st pressure hPa : -Rack travel in m: 9.00...9.40

Rack travel in m: 10.20...10.30 3rd pressure hPa : 550 Rack travel in m: 12.00...12.40 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 Speed rpm: 540
Del.quantity cm3/: 239.0...247.0
1000 s: (237.0...249.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -: 400 Speed rpm Del.quantity cm3/: 142.0...146.0 1000 s: (140.0...148.0) **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 11.30 rpm : 950...960 Speed

STARTING FUEL DELIVERY

Speed rpm: 325
Rack travel in mm: 4.60...4.80
Del.quantity cm3/: 37.0...43.0
1000 s: (35.0...45.0)
Spread cm3: 8.00
1000 s: (12.00)

Remarks:

LOW IDLE

Delivery-valve spring pre-tension 3.0...3.2 mm.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

2nd pressure hPa : 320

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: MAC 11,1 a9 : 30.10.89 Test sheet Edition : 10.2.89

Replaces : ISO-4113 Test oil

Combination no. : 0 402 746 833

Injection pump

Pump designation : PES6P120A720RS7135

: 0 412 726 807 EP type number

Governor

Governor design. : RQV325...975PA848-11

: 0 421 815 190 Governer no.

Customer-spec. information : MACK Customer

: E6-350 2VH Engine

: 257.0 1st version kW : 1950 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85

: (2.70...2.90) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 975 1st speed

Rack travel in mm : 14.10...14.20

Del.quantity cm3/: 23.0...23.2

100 s; (22.7...23.5)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm : 4.5...4.7 Del.quantity cm3/: 3.8...4.4 100 s: (3.6...4.6)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

: 1.40...1.60 travel mm

rpm : 450 2nd speed

: 2.50...2.80 travel mm

rpm : 800 3rd speed

: 4.80...5.00 travel mm

: 1050 4th speed rpm

: 7.30...7.60 : 1200 travel mm

5th speed rpm

: 9.40...9.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1190 Speed

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 975 Speed

Aneroid pressure h: 900 230.5...232.5 Del.quantity 1000 : (227.5...235.5) : 5.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 55...63 Testina: 1st rack travel in: 13.10 rpm : 1015...1025 Speed 2nd rack travel in: 4.00 Speed rpm: 1130...1160 4th rack travel in: 1300 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 10...18 Testina: : 275 Speed rom Minimum rack trave: 6.00 rpm Rack travel in mm : 4.50...4.70 CONSTANT REGULATION rpm : 325...600 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version rpm : 975 1st speed Rack travel in m: 14.10...14.20 2nd speed rpm : 700 Rack travel in m: 13.70...13.90 3rd speed rpm : 600 Rack travel in m: 0.00...13.30 Aneroid/Altitude Compensator Test 1st version Setting : 700 Speed rom hPa : 900 Pressure : 13.80...13.90 Rack travel mm Measurement 1/min: 700 Speed 1st pressure hPa : -Rack travel in m: 7.80...8.20 2nd pressure hPa : 240

Rack travel in m: 9.30...9.40

3rd pressure hPa : 510 Rack travel in m: 12.20...12.60 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 rpm : 700 Speed Del.quantity cm3/: 237.0...233.0 1000 s: (224.0...236.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: rpm : 400 Speed Del.quantity cm3/: 125.0...129.0 1000 s: (123.0...131.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.10 rpm : 1015...1025 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 110.0...150.0 1000 s: (100.0...160.0) Rack travel in mm: 7.80...8.20 LOW IDLE rpm : 325 Speed Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 38.0...44.0 1000 s: (36.0...46.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks: Delivery-valve spring pre-tension 3.0...3.2 mm. Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS Test pressure, bar: 17...19 Prestroke mm : 2.75...2.85 : (2.70...2.90) Rack travel in mm : 9.00...12.00 Note remarks Test sheet : MAC 12,0 a : 1-5-3-6-2-4 Edition : 30.10.89 Firing order : 10.2.89 Replaces Test oil : ISO-4113 : 0-60-120-180-240-300 Combination no. : 0 402 746 836 Phasing Phasing Tolerance + -., : 0.50 (0.75) Injection pump Pump designation : PES6P120A720RS7157 EP type number : 0 412 726 814 Time to cyl. no. : 1 Governor Governor design. : RQV325...900PA848-12 BASIC SETTING : 0 421 815 192 rpm: 900 1st speed Governer no. Rack travel in mm : 15.50...15.60 Customer-spec. information : MACK Customer Del.quantity cm3/: 27.2...27.4 : E7-400 4VH Engine 100 s: (26.9...27.7) : 298.0 1st version kW : 1800 cm3 : 0.5Rated speed Spread 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 325.0 Test oil 2nd speed Rack travel in mm: 4.9...5.1 inlet temp. ., C : 38...42 Del.quantity cm3/: 4.3...4.9 100 s: (4.1...5.1) Overflow valve : 2 417 413 011 cm3 : 0.8Spread 100 s: (1.2) Overflow quantity min. 1/h: 160...170 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 101 GUIDE SLEEVE TRAVEL assembly rpm : 325 : 1.30...1.60 1st speed travel mm Opening rpm : 500 : 3.40...4.00 : 207...210 pressure, bar 2nd speed travel mm rpm : 900 3rd speed Orifice plate : 6.70...6.90 : 0,6 travel mm diameter mm rpm : 1075 4th speed : 8.40...8.90 travel mm Test Lines : 1 680 750 008 GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: -1 rpm : 1120 x Lenath mm : 6.00X2.00X600 Speed Rack travel in mm : 7.00...13.00 (A) Injection pump setting values FULL LOAD DELIV. AT FULL LOAD STOP Insp. values in parentheses Set equal delivery quant. 1st version per values ___ rpm : 900 Speed BEGINNING OF DELIVERY Aneroid pressure h: 1200

: 272.0...274.0 Del.quantity 1000 : (269.0...277.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 56...64 Testing: 1st rack travel in: 14.50 Speed rpm : 940...950 2nd rack travel in: 4.00 rpm : 1115...1145 4th rack travel in: 1250 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 10...18 Testing: Speed rpm : 275 Minimum rack trave: 6.40 : 325 rpm Rack travel in mm : 4.90...5.10 CONSTANT REGULATION rpm : 325...500 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version : 900 1st speed rpm Rack travel in m: 15.50...15.60 rpm : 625 2nd speed Rack travel in m: 15.30...15.50 3rd speed rpm : 500 Rack travel in m: 0.00...14.60 Aneroid/Altitude Compensator Test 1st version Settina

Speed

: 900 rpm hPa : 1200 Pressure

: 15.50...15.60 Rack travel mm

Measurement

1/min: 900 Speed

1st pressure hPa : - Rack travel in m: 8.20...8.60

2nd pressure hPa : 225

Rack travel in m: 9.40...9.50

3rd pressure hPa : 770

Rack travel in m: 13.80...14.20

START CUT-OUT

1/min: 280 (290) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 625 Speed rpm

Del.quantity cm3/: 309.0...315.0 1000 s: (306.0...318.0)

cm3 : 8.00Spread 1000 s: (12.0)

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 166.0...170.0 1000 s: (164.0...172.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.50 rpm : 940...950 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 170.0...210.0 1000 s: (160.0...220.0)

Rack travel in mm : 9.90...10.30

LOW IDLE

Spread

Speed rpm: 325
Rack travel in mm: 4.90...5.10
Del.quantity cm3/: 43.0...49.0
1000 s: (41.0...51.0)

cm3 : 8.00

1000 s: (12.00)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: MAC 12,0 a1 Test sheet : 30.10.89 Edition : 10.2.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 746 837

Injection pump

Pump designation : PES6P120A720RS7157

: 0 412 726 814 EP type number

Governor

: RQV325...900PA848-15 Governor design.

: 0 421 815 193 Governer no.

Customer-spec. information Customer : MACK

: E7-350 4VH Engine

1st version kW : 261.0 : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85 : (2.70...2.90) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasina

Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 22.8...23.0

100 s: (22.5...23.3)

cm3 : 0.5Spread

100 s: (0.9)

rpm:325.02nd speed

Rack travel in mm: 5.3...5.5 Del.quantity cm3/: 4.1...4.7

100 s: (3.9...4.9)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 325 : 1.30...1.60 travel mm

rpm : 500 2nd speed

: 3.40...4.00 travel mm

rpm : 900 3rd speed

: 6.70...6.90 travel mm

: 1075 4th speed rpm

: 8.40...8.90 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1100

Speed Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rom : 900 Aneroid pressure h: 900

: 228.0...230.0 Del.quantity 1000 : (225.0...233.0) : 5.00 Spread cm3 : (9.00) 1000 RATED SPEED 1st version Control lever position degrees: 56...64 Testing: 1st rack travel in: 13.00 rpm : 950...960 Speed 2nd rack travel in: 4.00 rpm : 1100...1130 Speed 4th rack travel in: 1250 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 10...18

Testing: Speed rpm : 275 Minimum rack trave: 6.80 Speed rpm : 325 Rack travel in mm : 5.30...5.50

CONSTANT REGULATION rpm : 325...500 Speed

TORQUE CONTROL Dimension a mm Torque control curve - 1st version : 900 1st speed rpm Rack travel in m: 14.00...14.10 rpm : 625 2nd speed Rack travel in m: 13.80...14.00 3rd speed rpm : 500 Rack travel in m: 0.00...13.20

Aneroid/Altitude Compensator Test

1st version Setting : 900 Speed hPa : 900 Pressure : 14.00...14.10 Rack travel mm

Measurement 1/min: 900 Speed

1st pressure hPa : -Rack travel in m: 8.80...9.20 2nd pressure hPa : 225 Rack travel in m: 10.20...10.30 3rd pressure hPa : 545

Rack travel in m: 12.70...13.10

START CUT-OUT

1/min: 265 (275) Speed

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 900 : 625 Speed rpm

Del.quantity cm3/: 260.0...266.0 1000 s: (257.0...269.0)

cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -

rpm : 400 Speed

Del.quantity cm3/: 166.0...170.0 1000 s: (164.0...172.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.00 Speed rpm : 950...960

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 170.0...210.0 1000 s: (160.0...220.0)

Rack travel in mm : 10.40...10.80

LOW IDLE

Speed rpm : 325
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 41.0...47.0
1000 s: (39.0...49.0)

cm3 : 8.00 Spread 1000 s: (12.00)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS Test pressure, bar: 17...19 : 2.75...2.85 Prestroke mm Note remarks (2.70...2.90)

Rack travel in mm : 9.00...12.00 : MAC 12,0 a2 : 30.10.89 Test sheet : 1-5-3-6-2-4 Edition Firing order Replaces : 10.2.89 Test oil : ISO-4113 : 0 402 746 838 : 0-60-120-180-240-300 Combination no. Phasing Phasing Tolerance + - ... : 0.50 (0.75)Injection pump Pump designation : PES6P120A720RS7157 : 0 412 726 814 Time to cyl. no. : 1 EP type number Governor : RQV325...875PA848-14 BASIC SETTING Governor design. : 0 421 815 194 1st speed rpm: 875 Governer no. Rack travel in mm : 10.30...10.40 Customer-spec. information Customer : MACK Del.quantity cm3/: 17.3...17.5 : EM7-250L 4VH Engine 100 s: (17.0...17.8) 1st version kW : 187.0 : 1950 cm3 : 0.5Rated speed Spread 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 325.02nd speed Test oil Rack travel in mm: 4.7...4.9 inlet temp. _, C . : 38...42 Del.quantity cm3/: 4.1...4.7 100 s: (3.9...4.9) Overflow valve cm3 : 0.8 : 2 417 413 011 Spread 100 s: (1.2) Overflow quantity min. 1/h: 160...170 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 101 GUIDE SLEEVE TRAVEL assembly rpm : 325 1st speed travel mm : 1.30...1.60 Openina 2nd speed 500 : 207...210 pressure, bar rpm : 3.40...4.00 : 900 travel mm Orifice plate 3rd speed rpm : 6.70...6.90 : 0,6 travel mm diameter mm 4th speed rpm : 1075 : 8.40...8.90 travel mm Test lines : 1 680 750 008 GUIDE SLEEVE POSITION Control-lever position Outside diameter x Wall thickness Degree: -1 rpm : 1120 x Length mm : 6.00x2.00x600 Speed Rack travel in mm : 6.00...12.00 (A) Injection pump setting values FULL LOAD DELIV. AT FULL LOAD STOP Insp. values in parentheses Set equal delivery quant. 1st version per values Speed rpm : 875

Aneroid pressure h: 900

BEGINNING OF DELIVERY

: 173.0...175.0 Del.quantity 1000 : (170.0...178.0) : 5.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 52...60 Testing: 1st rack travel in: 9.30 Speed rpm : 915...925 2nd rack travel in: 4.00 rpm : 1020...1050 4th rack travel in: 1200 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 10...18 Testina: : 275 Speed rpm Minimum rack trave: 6.20 rpm Rack travel in mm : 4.70...4.90 CONSTANT REGULATION rpm : 325...500 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 875 Rack travel in m: 10.30...10.40 : 510 2nd speed riom Rack travel in m: 11.90...12.10 : 450 3rd speed rpm Rack travel in m: 0.00...11.80 Aneroid/Altitude Compensator Test 1st version Setting Speed : 510 rpm hPa : 900 Pressure : 11.90...12.10 Rack travel mm Measurement Speed 1/min: 510 1st pressure hPa : -Rack travel in m: 8.30...8.70 2nd pressure hPa : 205 Rack travel in m: 9.30...9.40

Rack travel in m: 11.00...11.40 START CUT-OUT 1/min: 265 (275) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 Speed rpm Del.quantity cm3/: 244.0...250.0 1000 s: (241.0...253.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 400 Speed Del.quantity cm3/: 168.0...172.0 1000 s: (166.0...174.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.30 rom : 915...925 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 170.0...210.0 1000 s: (160.0...220.0) Rack travel in mm: 9.80...10.20 LOW IDLE rpm : 325 Speed Rack travel in mm : 4.70...4.90 Del.quantity cm3/: 41.0...47.0 1000 s: (39.0...49.0) Spread cm3: 8.00 1000 s: (12.00) Remarks: Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

3rd pressure hPa : 400

BOSCH INJ. PUMP TEST SPECIFICATIONS : 2.75...2.85 : (2.70...2.90) Prestroke mm Note remarks Rack travel in mm : 6.00...8.00 : 1-5-3-6-2-4 : MAC 12,0 b Test sheet Firing order : 30.10.89 Edition : 10.2.89 Replaces : ISO-4113 Test oil : 0-60-120-180-240-300 Phasing : 0 402 746 839 Combination no. Tolerance + - ., . : 0.50 (0.75)Injection pump Pump designation : PES6P120A720RS7148 Time to cyl. no. : 1 : 0 412 726 810 EP type number BASIC SETTING Governor : RQV325...875PA848-19 Governor design. rpm: 875 1st speed : 0 421 815 199 Governer no. Rack travel in mm : 11.50...11.60 Customer-spec. information Del.quantity cm3/: 21.0...21.2 : MACK Customer 100 s: (20.7...21.5) : EM7 300L 4VH Engine cm3 : 0.5 : 224.0 Spread 1st version kW : 1950 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 325.0 2nd speed Rack travel in mm: 4.5...4.7 Test oil Del.quantity cm3/: 4.1...4.7 inlet temp. , C : 38...42 100 s: (3.9...4.9) cm3 : 0.8Overflow valve Spread : 2 417 413 011 100 s: (1.2) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder assembly : 1 688 901 101 GUIDE SLEEVE TRAVEL rpm : 325 1st speed 1.20...1.40 Opening travel mm : 450 : 207...210 2nd speed pressure, bar rpm travel mm 2.50...2.80 Orifice plate 3rd speed rpm : 600 : 4.10...4.30 diameter mm : 0,6 travel mm : 875 4th speed rpm : 7.30...7.50 travel mm : 1 680 750 008 : 1000 Test lines 5th speed rpm : 8.70...9.00 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00x2.00x600 Control-lever position x Length mm Degree: -1 rpm : 1030 (A) Injection pump setting values Speed Rack travel in mm : 6.00...12.00 Insp. values in parentheses Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values

1st version

Speed

rpm : 875

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

1st pressure hPa : -Rack travel in m: 8.70...9.10 Aneroid pressure h: 1200 : 210.0...212.0 Del.quantity 1000 : (207.0...215.0) 2nd pressure hPa : 325 Rack travel in m: 10.60...10.70 : 5.00 cm3 Spread 1000 : (9.00) 3rd pressure hPa : 815 Rack travel in m: 14.30...14.70 RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control Lever position degrees: 57...65 1st version Aneroid pressure h: 1200 Speed rpm : 510
Del.quantity cm3/ : 294.0...300.0
1000 s: (291.0...303.0) Testing: 1st rack travel in: 10.50 Speed rpm : 915...925 cm3 : 8.00 1000 s: (12.0) 2nd rack travel in: 4.00 Spread rpm : 1000...1030 4th rack travel in: 1150 Aneroid pressure h: rpm : 400 rpm : 0.00...1.00Speed Speed Del.quantity cm3/: 166.0...170.0 1000 s: (164.0...172.0) LOW IDLE 1 Control lever position degrees: 8...16 **BREAKAWAY** Testina: 1st version Speed rpm Minimum rack trave: 6.00 1mm rack travel less than rpm : 325 Speed Rack travel in mm : 4.50...4.70 full load rack tr: 10.50 rpm : 915...925 Speed CONSTANT REGULATION rpm : 325...520 STARTING FUEL DELIVERY Speed TORQUE CONTROL rpm : 100 Dimension a mm Speed Del.quantity cm3/: 165.0...185.0 1000 s: (155.0...195.0) Rack travel in mm: 8.70...9.10 Torque control curve - 1st version st speed rpm : 875 Rack travel in m: 11.50...11.60 1st speed rpm : 510 2nd speed rom Rack travel in m: 16.00...16.20 LOW IDLE 3rd speed rpm : 800 Speed rpm : 325 Rack travel in mm : 4.50...4.70 Rack travel in m: 12.00...12.20 4th speed rpm : 600 Del.quantity cm3/: 41.0...47.0 1000 s: (39.0...49.0) Spread cm3: 8.00 Rack travel in m: 15.10...15.30 5th speed rpm : 450 Rack travel in m: 0.00...15.70 1000 s: (12.00) Aneroid/Altitude Compensator Test Remarks: 1st version 3.2...3.4 mm. Setting Speed : 510 rpm hPa : 1200 Pressure : 16.00...16.20 Rack travel mm Measurement 1/min: 510 Speed

Note remarks

Test sheet : MAC 11,1a12 : 30.10.89 Edition : 10.2.89 Replaces

: ISO-4113 Test oil

Combination no. : 0 402 746 840

Injection pump

Pump designation : PES6P120A720RS7135

: 0 412 726 807 EP type number

Governor

Governor design. : RQV325...875PA848-18

: 0 421 815 198 Governer no.

Customer-spec. information Customer : MACK

: EMC6 250L 4VH Engine

: 187.0 1st version kW : 1950 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85 : (2.70...2.90)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 875

Rack travel in mm : 11.20...11.30

Del.guantity cm3/: 17.3...17.5

100 s: (17.0...17.8)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm: 4.5...4.7 Del.quantity cm3/: 3.9...4.5

100 s: (3.7...4.7)

cm3 : 0.8 Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 325 : 1.20...1.40 travel mm

2nd speed rpm : 450

travel mm : 2.80...3.20

: 850 3rd speed rpm

: 6.20...6.40 travel mm

: 1000 4th speed rpm

: 7.70...7.90 travel mm

GUIDE SLEEVE POSITION Control-Lever position

Degree: -1

rpm : 1100 Speed

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875 Aneroid pressure h: 1200

Del.quantity : 173.0...175.0 1000 : (170.0...178.0) cm3: 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 54...62 Testing: 1st rack travel in: 10.20 Speed rpm: 915...925 2nd rack travel in: 4.00 rpm : 1010...1040 Speed 4th rack travel in: 1100 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 9...17 Testing: Speed rpm : 275 Minimum rack trave: 6.00 : 325 Speed rpm Rack travel in mm : 4.50...4.70 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 875 Rack travel in m: 11.20...11.30 and speed rpm : 510
Rack travel in m: 13.10...13.30 2nd speed rpm : 700 3rd speed Rack travel in m: 12.00...12.20 4th speed rpm : 450 Rack travel in m: 0.00...13.10 Aneroid/Altitude Compensator Test 1st version Setting : 510 Speed rpm hPa : 1200 Pressure : 13.10...13.30 Rack travel mm Measurement 1/min: 510 Speed 1st pressure hPa : -Rack travel in m: 9.10...9.50

Rack travel in m: 10.30...10.40 3rd pressure hPa : 435 Rack travel in m: 12.20...12.60 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed rpm : 510 Del.quantity cm3/: 239.0...245.0 1000 s: (236.0...248.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -: 400 Speed rpm Del.quantity cm3/: 146.0...150.0 1000 s: (144.0...152.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.20 rpm : 915...925 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 160.0...200.0 1000 s: (150.0...210.0) Rack travel in mm : 9.10...9.50 LOW IDLE Speed rpm : 325 Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 39.0...45.0 1000 s: (37.0...47.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks: Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

2nd pressure hPa : 215

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MAC 11,1 e

: 30.10.89 Edition : 10.2.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 746 842

Injection pump

Pump designation : PES6P120A720RS7164 EP type number : 0 412 726 816

Governor

: RQV325...875PA848-17 Governor design.

: 0 421 815 200 Governer no.

Customer-spec. information Customer : MACK

: EMC6 300L 4VH Engine

: 200.0 1st version kW : 1950 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85 : (2.70...2.90) Rack travel in mm : 11.00...13.00 Firing order : 1-5- 3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance +-, : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 875

Rack travel in mm : 14.60...14.70

Del.quantity cm3/: 21.9...22.1

100 s: (21.6...22.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm: 4.3...4.5 Del.quantity cm3/: 3.9...4.5

100 s: (3.7...4.7)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

: 1.20...1.40 travel mm : 450

2nd speed rpm travel mm

: 3.00...3.40 : 850 3rd speed

rpm travel mm

: 5.90...6.10

: 1000 4th speed rpm

: 7.40...7.70 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1120 Speed

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875 Aneroid pressure h: 1200 Del.quantity : 219.0...224.0) cm3 : 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 54...62 1st version Testing: 1st rack travel in: 13.60 Speed rpm : 915...925 2nd rack travel in: 4.00 Spread rpm : 1060...1090 Speed 4th rack travel in: 1160 rpm : 0.00...1.00 Speed Speed LOW IDLE 1 Control lever position degrees: 10...18 BREAKAWAY Testing: Speed 1st version rpm Minimum rack trave: 5.80 Speed rpm : 325 Rack travel in mm : 4.30...4.50 Speed CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm Speed Torque control curve - 1st version : 875 1st speed rpm Rack travel in m: 14.60...14.70 rpm : 510 2nd speed Rack travel in m: 16.70...16.90 LOW IDLE 3rd speed rpm : 700
Rack travel in m: 15.30...15.50
4th speed rpm : 600 Rack travel in m: 16.00...16.20 : 420 5th speed rpm Rack travel in m: 0.00...16.80 Spread Aneroid/Altitude Compensator Test Remarks: 1st version Setting Speed rpm : 510 hPa : 1200 Pressure Rack travel mm : 16.70...16.90 Measurement 1/min: 510 Speed

Rack travel in m: 10.40...10.80 2nd pressure hPa : 375 Rack travel in m: 12.10...12.20 3rd pressure hPa : 735 Rack travel in m: 15.10...15.50 FUEL DELIVERY CHARACTERISTICS Aneroid pressure h: 1200 Speed rpm : 510 Del.quantity cm3/ : 304.0...310.0 1000 s: (301.0...313.0) cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: rpm : 400 Del.quantity cm3/: 156.0...160.0 1000 s: (154.0...162.0) 1mm rack travel less than full load rack tr: 13.60 Speed rpm : 915...925 STARTING FUEL DELIVERY : 100 rpm Del.quantity cm3/: 160.0...200.0 1000 s: (150.0...210.0) Rack travel in mm : 10.40...10.80 Speed rpm : 325 Rack travel in mm : 4.30...4.50 Del.quantity cm3/: 39.0...45.0 1000 s: (37.0...47.0) cm3 : 8.00 1000 s: (12.00) Delivery-valve spring pre-tension 3.2...3.4 mm. Permissible alteration of 3.0...3.5 mm Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

1st pressure hPa : -

Note remarks

Test sheet : MAC 11,1a15 Edition : 31.10.89 : 7.4.89 Replaces Test oil : TSO-4113

Combination no. : 0 402 746 846

Injection pump

Pump designation : PES6P120A720RS7135

: 0 412 726 807 EP type number

Governor

Governor design. : RQV325...850PA848-23

: 0 421 815 204 Governer no.

Customer-spec. information

: MACK TRUCKS Customer

: E6 300 4VH Engine

: 224.0 1st version kW : 1700 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Openina (

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85 : (2.70...2.90) Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rom:850

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 20.0...20.2

100 s: (19.7...20.5)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm: 4.5...4.7

Del.quantity cm3/: 3.2...3.8 100 s: (3.0...4.0)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

: 1.20...1.40 travel mm

2nd speed : 450 rpm

: 2.80...3.10 travel mm

: 850 3rd speed rpm

: 6.20...6.40 travel mm

: 1000 4th speed rpm

: 7.70...7.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1100 Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850 Aneroid pressure h: 900

: 200.0...202.0 Del.quantity 1000 : (197.0...205.0) cm3: 5.00 Spread 1000 : (9.00)

RATED SPEED

1st version Control Lever position degrees: 50...58

Testing: 1st rack travel in: 11.90 Speed rpm : 900...910 2nd rack travel in: 4.00

rpm : 1025...1055 4th rack travel in: 1100

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 7...15

Testing:

rpm : 275 Speed Minimum rack trave: 6.00 : 325 rpm

Rack travel in mm: 4.50...4.70

Rack travel in mm: 2.00

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 12.90...13.00

rpm : 700 2nd speed

Rack travel in m: 13.60...13.70

rpm : 600 3rd speed

Rack travel in m: 13.80...13.90 th speed rpm : 500

4th speed

Rack travel in m: 0.00...13.60

Aneroid/Altitude Compensator Test

1st version Setting

: 600 Speed rom hPa : 900 Pressure

Rack travel mm : 13.80...13.90

Measurement

Speed 1/min: 600

1st pressure hPa : -

Rack travel in m: 10.30...10.50

2nd pressure hPa : 250

Rack travel in m: 11.20...11.30

3rd pressure hPa : 475

Rack travel in m: 12.90...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

rpm

Del.quantity cm3/: 237.0...243.0 1000 s: (234.0...246.0)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: -

rpm : 400 Speed

Del.quantity cm3/: 154.0...158.0 1000 s: (152.0...160.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.90 rpm : 900...910 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 195.0...235.0 1000 s: (185.0...245.0) Rack travel in mm: 10.30...10.50

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.50...4.70
Del.quantity cm3/ : 32.0...38.0
1000 s: (30.0...40.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension 3.0...3.2 mm.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

: MAC 11,1a16 : 31.10.89 : 7.4.89 Test sheet Edition Replaces Test oil : ISO-4113

Combination no. : 0 402 746 847

Injection pump

Pump designation : PES6P120A720RS7135

EP type number : 0 412 726 807

Governor

Governor design. : RQV325...850PA878-8K

: 0 421 815 205 Governer no.

Customer—spec. information

Customer : MACK TRUCKS

: E6 300 4VH Engine

: 224.0 1st version kW : 1700 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening 1

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test Lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 Prestroke mm : (2.70...2.90)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance $+ - \frac{1}{2} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 850

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 20.0...20.2

100 s: (19.7...20.5)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 325.0
Rack travel in mm : 4.5...4.7
Del.quantity cm3/: 3.2...3.8

100 s: (3.0...4.0)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

: 1.20...1.40 travel mm rpm : 450 2nd speed

: 2.80...3.10 travel mm

rpm : 850 3rd speed

: 6.20...6.40 travel mm

4th speed rpm: 1000

: 7.70...7.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 Speed rpm: 1100 Rack travel in mm: 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 900

Del.quantity : 200.0...202.0

1000 : (197.0...205.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 50...58

Testing:

1st rack travel in: 11.90 Speed rpm : 900...910 2nd rack travel in: 4.00

rpm : 1025...1055 Speed

4th rack travel in: 1100

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 7...15

Testing:

: 275 Speed rpm Minimum rack trave: 6.00 rpm : 325

Rack travel in mm : 4.50...4.70 Rack travel in mm : 2.00

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Torque control curve - 1st version

rpm : 850 1st speed

Rack travel in m: 12.90...13.00

: 700 2nd speed rom

Rack travel in m: 13.60...13.70

3rd speed rpm : 600

Rack travel in m: 13.80...13.90 h speed rpm : 500

4th speed rpm

Rack travel in m: 0.00...13.60

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 **Speed** man hPa : 900 Pressure

: 13.80...13.90 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 10.30...10.50

2nd pressure hPa : 250

Rack travel in m: 11.20...11.30 3rd pressure hPa : 475

Rack travel in m: 12.90...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

: 600 Speed rpm Del.quantity cm3/: 237.0...243.0

1000 s: (234.0...246.0)

Spread cm3 : 8.00 1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 400 Del.quantity cm3/: 154.0...158.0

1000 s: (152.0...160.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.90 rpm : 900...910 Speed

STARTING FUEL DELIVERY

rom : 100 Speed

Del.quantity cm3/: 195.0...235.0 1000 s: (185.0...245.0)

Rack travel in mm : 10.30...10.50

LOW IDLE

Speed rpm

Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 32.0...38.0 1000 s: (30.0...40.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension 3.0...3.2 mm.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

Test sheet

: MAC 11,1a17 : 31.10.89 : 7.4.89

Edition Replaces

Test oil

: ISO-4113

Combination no. : 0 402 746 849

Injection pump

Pump designation : PES6F120A720RS7135

EP type number

: 0 412 726 807

Governor

Governor design. : RQV325...850PA878-10

Governer no.

: 0 421 815 209

Customer-spec. information

Customer

: MACK TRUCKS

Engine

: E6 275 4VH

1st version kW

: 202.0

Rated speed

: 1800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

Openina

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,6

Test lines

: 1 680 750 908

Outside diameter

x Wall thickness

x Length mm

: 6.00X2.00X600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm

: 2.75...2.85

: (2.70...2.90)

Rack travel in mm : 10.50 Firing order : 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 850

Rack travel in mm : 11.90...12.00

Del.guantity cm3/: 18.3...18.5

100 s: (18.0...18.8)

Spread

2nd speed

Spread

cm3 : 0.5

100 s: (0.9)

rpm : 325.0

Rack travel in mm : 4.5...4.7 Del.quantity cm3/ : 3.2...3.8

100 s: (3.0...4.0)

cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm: 325

travel mm

: 1.20...1.40

2nd speed rpm: 450

: 2.80...3.10

travel mm 3rd speed

rpm : 850

travel mm

: 6.20...6.40

4th speed

rpm : 1000 travel mm

: 7.70...7.90

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1100

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed

rpm : 850

Aneroid pressure h: 900

Del.quantity : 183.0...185.0 1000 : (180.0...188.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 50...58 Testina: 1st rack travel in: 10.90 Speed rpm: 900...910 2nd rack travel in: 4.00 rpm : 1025...1055 Speed 4th rack travel in: 1100 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 7...15 Testing: : 275 Speed rom Minimum rack trave: 6.40 : 325 Speed rpm Rack travel in mm : 4.50...4.70 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 850 Rack travel in m: 11.90...12.90 and speed rpm : 700 Rack travel in m: 12.80...12.90 2nd speed rpm 3rd speed rpm : 600 Rack travel in m: 13.00...13.10 4th speed rpm : 500 Rack travel in m: 0.00...12.80 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed man hPa : 900 Pressure : 13.00...13.10 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 10.30...10.50 2nd pressure hPa : 225 Rack travel in m: 11.00...11.10

3rd pressure hPa : 385 Rack travel in m: 12.20...12.60 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 rpm : 600 Speed Del.quantity cm3/: 219.5...225.5 1000 s: (216.5...228.5) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 400 Del.quantity cm3/: 154.0...158.0 1000 s: (152.0...160.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.90 : 900...910 Speed man STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 195.0...235.0 1000 s: (185.0...245.0) Rack travel in mm : 10.30...10.50 LOW IDLE Speed rpm : 325 Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 32.0...38.0 1000 s: (30.0...40.0) cm3 : 8.00Spread 1000 s: (12.00) Remarks: Delivery-valve spring pre-tension 3.0...3.2 mm. Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Note remarks

Test sheet : MAC 11,1a13 Edition : 31.10.89 : 2.5.89 Replaces

Test oil : ISO-4113

: 0 402 746 851 Combination no.

Injection pump

Pump designation : PES6P120A720RS7135

: 0 412 726 807 EP type number

Governor

Governor design. : RQV325...850PA848-25

: 0 421 815 208 Governer no.

Customer-spec. information

Customer : MACK TRUCKS

: E6 275 4VH Engine

: 202.0 1st version kW : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 18.3...18.5

100 s: (18.0...18.8)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm: 4.5...4.7 Del.quantity cm3/: 3.2...3.8

100 s: (3.0...4.0)

cm3 : 0.8

Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

: 1.20...1.40 travel mm

2nd speed : 450 rpm

2.80...3.10 travel mm : 850

3rd speed rpm

: 6.20...6.40 travel mm

: 1000 4th speed rpm

: 7.70...7.90 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Speed rpm: 1100 Rack travel in mm: 7.00...13.00

Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed Aneroid pressure h: 900

C27

Del.quantity : 185.0...188.0) : 5.00 Spread cm31000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 50...58 Testing: 1st rack travel in: 10.90 rpm : 900...910 2nd rack travel in: 4.00 Speed rpm : 1025...1055 4th rack travel in: 1100 Speed rpm: 0.00...1.00 LOW IDLE 1 Control Lever position degrees: 7...15 Testing: Speed rpm : 275 Minimum rack trave: 6.40 Speed rpm : 325 Rack travel in mm : 4.50...4.70 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 850 1st speed Rack travel in m: 11.90...12.00 : 700 2nd speed rpm Rack travel in m: 12.80...12.90 rpm : 600 3rd speed Rack travel in m: 13.00...13.10 4th speed rpm : 500 Rack travel in m: 0.00...12.80 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 900 Pressure : 13.00...13.10 Rack travel mm Measurement 1/min: 600 Speed

3rd pressure hPa : 385 Rack travel in m: 12.20...12.60 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 Speed rpm : 600 Del.quantity cm3/: 219.5...225.5 1000 s: (216.5...228.5) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 400 Speed Del.quantity cm3/: 154.0...158.0 1000 s: (152.0...160.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.90 rpm : 900...910 Speed STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 195.0...235.0 1000 s: (185.0...245.0) Rack travel in mm : 10.30...10.50 LOW IDLE Speed rpm : 325 Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 32.0...38.0 1000 s: (30.0...40.0) cm3 : 8.00Spread 1000 s: (12.00) Remarks: Delivery-valve spring pre-tension 3.0...3.2 mm. Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

1st pressure hPa : -

2nd pressure hPa : 225

Rack travel in m: 10.30...10.50

Rack travel in m: 11.00...11.10

Note remarks

: MAC 11,1a14 Test sheet : 31.10.89 Edition : 2.5.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 746 852

Injection pump

Pump designation : PES6P120A720RS7157 EP type number : 0 412 726 814

Governor

Governor design. : RQV325...900PA909K

: 0 421 815 210 Governer no.

Customer-spec. information

: MACK TRUCKS Customer

: £7-400 Engine

: 298.0 1st version kW : 1700 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85 : (2.70...2.90) Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ., : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 15.80...15.90

Del.quantity cm3/: 27.5...27.7

100 s: (27.2...28.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm: 4.7...4.9 Del.quantity cm3/: 4.0...4.6

100 s: (3.8...4.8)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325 travel mm : 1.20...1.40

rpm : 450 2nd speed

: 2.80...3.20 travel mm

rpm : 650 3rd speed

: 5.60...5.80 travel mm

rpm : 900 4th speed

: 8.30...8.50 travel mm

rpm : 1100 5th speed

: 10.30...10.80 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

Aneroid pressure h: 1200

Del.quantity : 275.0...277.0 1000 : (272.0...280.0)

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version

Control lever

position degrees: 58...66

Testina:

1st rack travel in: 14.80 Speed rpm : 940...950 2nd rack travel in: 4.00

rpm : 1120...1150 Speed 4th rack travel in: 1200

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever

position degrees: 7...15

Testina:

rpm Speed Minimum rack trave: 6.30 : 325 Speed rpm

Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Torque control curve - 1st version

rpm : 900 1st speed

Rack travel in m: 15.80...15.90

2nd speed rpm : 625

Rack travel in m: 15.20...15.30

3rd speed rpm: 700

Rack travel in m: 15.50...15.60 4th speed rpm : 500

Rack travel in m: 0.00...13.50

Aneroid/Altitude

Compensator Test

1st version

Settina

: 900 Speed rpm hPa : 1200 Pressure

: 15.80...15.90 Rack travel mm

Measurement

1/min: 900 Speed

1st pressure hPa : -

Rack travel in m: 8.10...8.50 2nd pressure hPa : 325 Rack travel in m: 10.20...10.30

3rd pressure hPa : 790

Rack travel in m: 13.80...14.20

START CUT-OUT

1/min: 275 (285) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 625 Speed rpm

Del.quantity cm3/: 302.5...308.5 1000 s: (299.5...311.5)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: -: 400 Speed rom

Del.quantity cm3/: 157.5...161.5

1000 s: (155.5...163.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.80

rpm : 940...950 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 180.0...220.0

1000 s: (170.0...230.0)

Rack travel in mm : 10.40...10.60

LOW IDLE

Speed rpm

Rack travel in mm : 4.70...4.90

Del.quantity cm3/: 40.0...46.0

1000 s: (38.0...48.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension

3.0...3.2 mm.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS : 2.75...2.85 : (2.70...2.90) Prestroke mm Note remarks Rack travel in mm: 10.50 : 1-5-3-6-2-4 Test sheet : MAC 12,0 a4 Firing order : 31.10.89 : 2.5.89 Edition Replaces : ISO-4113 Test oil : 0-60-120-180-240-300 Phasing Combination no. : 0 402 746 853 Tolerance + - ... : 0.50 (0.75)Injection pump Pump designation : PES6P120A720RS7157 Time to cyl. no. : 1 EP type number : 0 412 726 814 BASIC SETTING Governor Governor design.: RQV325...900PA909-1K : 0 421 815 211 Governer no. 1st speed rpm: 900 Rack travel in mm : 13.80...13.90 Customer-spec. information Customer : MACK TRUCKS Del.quantity cm3/: 23.3...23.5 : E7-350 Engine 100 s: (23.0...23.8) 1st version kW : 261.0 : 1800 cm3 : 0.5Spread Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 325.0 Test oil 2nd speed Rack travel in mm: 4.7...4.9 inlet temp. _, C . : 38...42 Del.quantity cm3/: 4.0...4.6 100 s: (3.8...4.8) Overflow valve cm3 : 0.8 100 s: (1.2) : 2 417 413 011 Spread Overflow quantity min. 1/h: 160...170 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 101 GUIDE SLEEVE TRAVEL assembly rpm : 325 1st speed : 1.20...1.40 **Opening** travel mm rpm : 450 pressure, bar : 207...210 2nd speed : 2.80...3.20 travel mm 3rd speed rpm : 650 Orifice plate : 5.60...5.80 diameter mm : 0,6 travel mm rpm : 900 4th speed : 8.30...8.50 travel mm : 1 680 750 008 : 1100 Test Lines 5th speed rpm : 10.30...10.80 travel mm Outside diameter FULL LOAD DELIV. AT FULL LOAD STOP x Wall thickness : 5.00X2.00X600 x Length mm 1st version rpm : 900 (A) Injection pump setting values Speed Aneroid pressure h: 1200 Insp. values in parentheses : 233.5...235.5 1000 : (230.5...238.5) Set equal delivery quant.

Del.quantity

Spread

: 5.00

1000 : (9.00)

cm3

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

RATED SPEED

1st version

Control Lever

position degrees: 58...66

Testina:

1st rack travel in: 12.80 Speed rpm : 940...950

2nd rack travel in: 4.00

rpm : 1080...1110 Speed

4th rack travel in: 1200

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 7...15

Testina:

Speed rom

Minimum rack trave: 6.30

: 325 Speed rpm Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Torque control curve - 1st version

rpm : 900 1st speed

Rack travel in m: 13.80...13.90

2nd speed rpm : 625

Rack travel in m: 13.50...13.70 3rd speed rpm : 500 Rack travel in m: 11.50...11.90

Aneroid/Altitude

Compensator Test

1st version

Setting

: 900 Speed rpm Pressure hPa : 1200

: 13.80...13.90 Rack travel mm

Measurement

Speed 1/min: 900

1st pressure hPa : -Rack travel in m: 7.80...8.20

2nd pressure hPa : 325 Rack travel in m: 9.40...9.50

3rd pressure hPa : 685

Rack travel in m: 12.10...12.50

START CUT-OUT

1/min: 275 (285) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

: 625 Speed rpm

Del.quantity cm3/: 266.0...272.0 1000 s: (263.0...275.0)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: -: 400 Speed rpm

Del.quantity cm3/: 153.0...157.0 1000 s: (151.0...159.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80

rpm : 940...950 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 170.0...210.0

1000 s: (160.0...220.0)

Rack travel in mm : 10.10...10.30

LOW IDLE

Speed rpm

Rack travel in mm : 4.70...4.90

Del.guantity cm3/: 40.0...46.0

1000 s: (38.0...48.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension

3.0...3.2 mm.

Bow dimension:

Sliding-sleeve position = 37.0 mm Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

: MAC 16.0 a : 31.10.89 Test sheet Edition : 1.9.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 748 802

Injection pump

Pump designation : PES8P120A920/4LS7159

EP type number : 0 412 728 801

Governor

: RQV325...1050PA848-Governor design.

21K

: 0 421 815 201 Governer no.

Customer-spec. information Customer : MACK

Engine : EE9 502

1st version kW : 368.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

: 3.55...3.65 Prestroke mm

: (3.59...3.70)

Rack travel in mm : 9.00...12.00

Firing order : 1-2-7-8-4-5-6-

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 630

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 20.7...20.9

100 s: (20.4...21.2)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm : 4.8...5.0

Del.quantity cm3/: 4.0...4.6 100 s: (3.8...4.8)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

: 1.30...1.60 travel mm

2nd speed : 450 rpm

: 2.30...2.70 travel mm

: 800 3rd speed rpm

travel mm : 4.40...4.80

4th speed rpm : 1050

: 6.90...7.10 travel mm

5th speed rpm : 1200

: 8.90...9.20 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1220 Speed

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 630 Speed Aneroid pressure h: 1200 : 207.0...209.0 1000 : (204.0...212.0) Del.quantity : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 57...65 Testina: 1st rack travel in: 12.10 rpm : 1095...1105 Speed 2nd rack travel in: 4.00 Speed rpm : 1180...1210 4th rack travel in: 1300 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 9...17 Testina: Speed rpm : 275 Minimum rack trave: 6.30 rpm : 325 Rack travel in mm : 4.80...5.00 CONSTANT REGULATION rpm : 325...600 Speed TORQUE CONTROL Torque control curve - 1st version : 630 1st speed rom Rack travel in m: 11.90...12.00 rpm : 1050 2nd speed Rack travel in m: 13.10...13.30 3rd speed rpm : 500 Rack travel in m: 0.00...11.30 Aneroid/Altitude Compensator Test 1st version Settina rpm : 1050 hPa : 1200 : 1050 Speed Pressure : 13.10...13.20 Rack travel mm Measurement 1/min: 1050 Speed 1st pressure hPa : -Rack travel in m: 8.40...8.80

Rack travel in m: 9.90...10.00 3rd pressure hPa : 725 Rack travel in m: 12.00...12.40 START CUT-OUT 1/min: 280 (290) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 : 1050 rpm Del.quantity cm3/: 202.0...208.0 1000 s: (199.0...211.0) cm3 : 10.00Spread 1000 s: (14.0) Aneroid pressure h: -Speed rpm : 400 Del.quantity cm3/: 154.0...158.0 1000 s: (152.0...160.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.10 rpm : 1095...1105 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 140.0...180.0 1000 s: (130.0...190.0) Rack travel in mm : 9.30...9.70 LOW IDLE Speed rpm : 325 Rack travel in mm : 4.80...5.00 Del.quantity cm3/: 40.0...46.0 1000 s: (38.0...48.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

2nd pressure hPa : 345

Note remarks

: CUM 8,3 D 7 : 13.10.89 Test sheet Edition : 10.02.89 Replaces : ISO-4113 Test oil

Combination no. : 0 403 436 109

Injection pump

Pump designation : PES6MW100/120RS1143

EP type number : 0 413 406 137

Governor

Governor design.: RQV300...1050MW82-4

Governer no. : 0 420 083 168

Cust. part no. : 3915581

Customer-spec. information Customer : CUMMINS/US

Engine : 6 CTA-830

: 175.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. .. C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 014 Test lines

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.05...3.15 Prestroke mm

: (3.00...3.20)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 12.60...12.70

Del.quantity cm3/: 14.8...15.0

100 s: (14.6...15.2)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.0 2nd speed Rack travel in mm: 7.7...7.9

Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm: 1210

: 9.00...9.40 travel mm

rpm : 1100 2nd speed

travel mm : 7.90...8.10

rpm : 550 3rd speed

: 3.00...3.60 travel mm

rpm : 300 4th speed

: 1.10...1.50 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 900

Del.quantity

: 148.0...150.0 1000 : (146.0...152.0)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version Control Lever Testing:

position degrees: 42...50

1st rack travel in: 11.60 rpm : 1090...1100 Speed

2nd rack travel in: 4.00

Speed rpm: 1185...1215 4th rack travel in: 1300

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever

position degrees: 10...18

Setting point w/out bumper spring Speed rom

Rack travel in mm: 7.8

Testing:

: 100 Speed rom Minimum rack trave: 9.30 rpm : 300 Speed

Rack travel in mm : 7.70...7.90

Aneroid/Altitude Compensator Test

1st version Settina

: 500 Speed rom hPa : Pressure

: 9.50...9.70 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : 300 Rack travel in m: 10.80...10.90

2nd pressure hPa : 520

Rack travel in m: 11.90...12.20

3rd pressure hPa : 900

Rack travel in m: 12.60...12.70

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 rpm : 700 Speed

Del.quantity cm3/: 145.5...148.5 1000 s: (143.0...151.0)

cm3 : 5.00

1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 78.0...80.0 1000 s: (76.9...82.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 215.0...225.0 1000 s: (212.0...228.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300

Rack travel in mm : 7.70...7.90 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

cm3 : 3.50Spread 1000 s: (5.50)

Remarks:

: C.D.C. #3915581

Start-of-delivery mark/lock = 8.0, angular displacement of the cam after start of delivery of cylinder 1.

Spread

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : CUM 8,3 D12 Edition : 02.10.89 Replaces : 30.05.89 Test oil : ISO-4113 Combination no. : 0 403 436 111 Injection pump Pump designation : PES6MW100/120RS1143 : 0 413 406 137 EP type number Governor Governor design. : RQV350...1200MW82-6 : 0 420 083 184 Governer no. : 3916000 Cust. part no. Customer-spec. information : CUMMINS/US Customer : 6 CTA-830 Engine Rated speed : 2400 TEST BENCH REQUIREMENTS Test oil inlet temp., C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 017 assembly Opening : 207...210 pressure, bar Orifice plate : 0,6 diameter mm : 1 680 750 008 Test lines Outside diameter x Wall thickness : 6.00X2.00X600 x Length mm (A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant. per values ____ BEGINNING OF DELIVERY Test pressure, bar: 30...32

Prestroke mm : 3.15...3.25 : (3.10...3.30)
Rack travel in mm : 9.00...12.00
Firing order : 1-5-3-6-2-4 : 0-60-120-180-240-300 Phasing Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 1 BASIC SETTING rpm: 1200 1st speed Rack travel in mm : 12.10...12.20 Del.guantity cm3/: 13.8...14.0 100 s: (13.6...14.2) Spread cm3 : 0.3100 s: (0.6) 2nd speed rpm : 350.0Rack travel in mm: 7.1...7.3 Del.quantity cm3/: 1.2...1.6 100 s: (1.0...1.8) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm: 1250 : 7.60...7.80 travel mm rpm : 1350 2rid speed : 8.60...9.00 travel mm rpm : 350 3rd speed : 1.20...1.60 travel mm rpm : 800 4th speed : 4.90...5.50 travel mm FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1200 Speed Aneroid pressure h: 700 : 138.0...140.0 Del.quantity 1000 : (136.0...142.0) : 3.50 Spread cm3 1000 : (6.00) RATED SPEED

1st version

Control Lever position degrees: 42...50 Testing: 1st rack travel in: 11.10 rpm : 1240...1250 2nd rack travel in: 4.00 Speed rpm : 1370...1400 4th rack travel in: 1455 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 11...19 Setting point w/out bumper spring : 350 rpm Rack travel in mm: 7.2 Testing: Speed rpm : 100 Minimum rack trave: 9.00 : 350 rpm Rack travel in mm : 7.10...7.30 CONSTANT REGULATION rpm : 360...500 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 1200 1st speed Rack travel in m: 12.10...12.20 rpm : 750 2nd speed Rack travel in m: 12.50...12.60 : 1000 3rd speed rpm Rack travel in m: 12.10...12.20 : 900 4th speed rpm Rack travel in m: 12.20...12.40 Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed rpm Pressure hPa : -: 11.00...11.10 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 390 Rack travel in m: 11.40...11.50 2nd pressure hPa : 480 Rack travel in m: 11.90...12.20 3rd pressure hPa : 700 Rack travel in m: 12.50...12.60

1/min : 270 (280) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 : 750 Speed rpm Del.quantity cm3/: 139.0...142.0 1000 s: (136.5...144.5) cm3 : 5.00Spread 1000 s: (7.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 108.0...110.0 1000 s: (106.0...112.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.10 rpm : 1240...1250 Speed STARTING FUEL DELIVERY : 100 Speed man Del.quantity cm3/: 205.0...225.0 1000 s: (202.0...228.0) LOW IDLE Speed rpm: 350 Rack travel in mm: 7.10...7.30 Del.quantity cm3/: 12.0...16.0 1000 s: (10.0...18.0) cm3 : 3.50 Spread 1000 s: (5.50) Remarks: : C.D.C. #3916000 Start-of-delivery mark at 10, cam rotation angle after start of delivery, cylinder 1

START CUT-OUT

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : VOL 4,5 K : 03.11.89 Test sheet Edition : 30.05.89 Replaces : ISO-4113 Test oil Combination no. : 0 403 444 108 Injection pump Pump designation : PES4MW100/320RS1116 : 0 413 404 102 EP type number Governor Governor design. : RQV300...1100MW51 : 0 420 083 072 Governer no. Customer-spec. information Customer : VME : TD45 Engine 1st version kW : 88.5 : 2200 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Openina : 172...175 pressure, bar Test Lines : 1 680 750 014 Outside diameter x Wall thickness : 6.00x2.00x600 x Lenath mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values BEGINNING OF DELIVERY Test pressure, bar: 30...32

Rack travel in mm : 9.00...12.00

: 3.25...3.35

: (3.20...3.40)

: 1-3-4-2 Firing order : 0-90-180-270 Phasing Tolerance $+ - \dots : 0.50 (0.75)$ BASIC SETTING rpm: 700 1st speed Rack travel in mm : 13.00...13.10 Del.quantity cm3/: 12.0...12.2 100 s: (11.8...12.4) cm3 : 0.3Spread 100 s: (0.6) rpm : 300.02nd speed Rack travel in mm: 5.8...6.0 Del.quantity cm3/: 1.3...1.7 100 s: (1.0...1.9) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 1220 1st speed : 9.20...9.60 travel mm rpm : 1150 2nd speed travel mm : 8.40...8.60 3rd speed : 420 rpm : 1.70...2.30 travel mm 4th speed 300 rpm : : 1.00...1.40 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1100 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 700 Speed Aneroid pressure h: 1000 Anerow P. Del.quantity 1000 : 120.0...122.0 : (118.0...124.0) : 3.50 cm3 Spread 1000 : (6.00)

RATED SPEED

Prestroke mm

1st version Spread cm3 : 5.501000 s: (7.0) Control lever position degrees: 48...56 Aneroid pressure h: -Speed rpm : 700 Del.quantity cm3/: 85.0...87.0 Testina: 1000 s: (83.0...89.0) 1st rack travel in: 12.00 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 Speed rpm: 1200...1230 4th rack travel in: 1350 BREAKAWAY rpm : 0.00...1.00 1st version Speed 1mm rack travel less than LOW IDLE 1 full load rack tr: 12.00 Control Lever rpm : 1140...1150 position degrees: 8...16 Speed Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 5.9 STARTING FUEL DELIVERY Speed rpm : 100 Testing: Del.quantity cm3/: 130.0...140.0 : 100 Speed rpm 1000 s: (127.0...143.0) Minimum rack trave: 8.00 : 300 Speed rpm Rack travel in mm : 5.80...6.00 LOW IDLE Speed rpm: 300 Rack travel in mm: 5.80...6.00 CONSTANT REGULATION rpm : 330...450 Speed Del.quantity cm3/: 13.0...17.0 1000 s: (10.5...19.5) Aneroid/Altitude cm3 : 3.50 Compensator Test Spread 1000 s: (5.50) 1st version Remarks: : Setting : 700 Speed man hPa : 520 Pressure : 12.90...13.00 Rack travel mm Measurement 1/min: 700 Speed 1st pressure hPa : -Rack travel in m: 11.00...11.10 2nd pressure hPa : 275 Rack travel in m: 11.10...11.40 3rd pressure hPa : 1000 Rack travel in m: 13.00...13.10 START CUT-OUT 1/min : 220 (250) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 : 1000 Speed rpm Del.quantity cm3/: 118.5...121.5 1000 s: (116.0...124.0)

Note remarks

Test sheet : VOL 4,5 L 1 Edition : 03.11.89

Replaces :

Test oil : ISO-4113

Combination no. : 0 403 444 109

Injection pump

Pump designation : PES4MW100/320RS1116

EP type number : 0 413 404 102

Governor

Governor design. : RQV300...1100MW39-6

Governer no. : 0 420 083 087

Customer-spec. information

Customer : VME

Engine : TD45

1st version kW : 69.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35

: (3.20...3.40)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ... : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 8.5...8.7

100 s: (8.3...8.9)

Spread cm3: 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 1.3...1.7 100 s: (1.0...1.9)

Spread cm3: 0.3

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1225

travel mm : 9.40...9.80

2nd speed rpm: 1150

travel mm : 8.30...8.50

3rd speed rpm : 600

travel mm : 2.70...3.30

4th speed rpm: 300

travel mm : 1.00...1.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1130

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm: 700

Del.quantity : 85.0...87.0 1000 : (83.0...89.0)

Spread cm3 : 3.50 1000 : (6.00)

RATED SPEED

1st version

Control lever position degrees: 44...52 Testing: 1st rack travel in: 9.70 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1200...1230 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 10...18 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 5.9 Testing: : 100 Speed rpm Minimum rack trave: 8.00 rpm : 300 Speed Rack travel in mm : 5.80...6.00 CONSTANT REGULATION rpm : 330...450 Speed START CUT-OUT 1/min: 220 (250) Speed FUEL DELIVERY CHARACTERISTICS 1st version : 1000 Speed rpm Del.quantity cm3/: 87.5...90.5 1000 s: (85.0...93.0) cm3 : 5.50 Spread 1000 s: (7.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.70 rpm : 1140...1150 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 130.0...140.0

1000 s: (127.0...143.0)

: 300

rpm

Rack travel in mm : 5.80...6.00 Del.quantity cm3/ : 13.0...17.0 1000 s: (10.5...19.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

:

D14

Speed

LOW IDLE

Note remarks

: VOL 4,5 L Test sheet Edition : 03.11.89 Replaces : 07.04.89 Test oil : ISO-4113

Combination no. : 0 403 444 111

Injection pump

Pump designation : PES4MW100/320RS1116 : 0 413 404 102

EP type number Governor

Governor design. : RQV300...1100MW39-5

: 0 420 083 068 Governer no.

Customer-spec. information Customer : VME

: TD45 Engine

1st version kW : 88.5 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 173...176 pressure, bar

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.00...3.10 Prestroke mm

: (2.95...3.15) Rack travel in mm : 9.00...12.00

: 1-3-4-2 Firing order

Phasing : 0-90-180-270

Tolerance + -., .: 0.50 (0.75)

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 13.00...13.10

Del.guantity cm3/: 11.7...11.9

100 s: (11.5...12.1)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 1.3...1.7

100 s: (1.0...1.9) Spread

cm3 : 0.3 100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1225 1st speed

: 9.40...9.80 travel mm : 1150 2nd speed rpm

: 8.30...8.50 travel mm

rpm : 600 3rd speed

: 2.70...3.30 travel mm

rpm : 300 4th speed : 1.00...1.40 travel mm

GUIDE SLEEVE POSITION

Control-Lever position

Degree: -1

rpm : 1130

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Del.quantity : 117.0...119.0

1000 : (115.0...121.0) : 3.50 cm3

Spread 1000 : (6.00)

RATED SPEED

1st version

Control lever position degrees: 44...52

Testing:

1st rack travel in: 12.00 rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1225...1255 Speed 4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 10...18 Setting point w/out bumper spring

: 300 rpm Rack travel in mm: 6.5

Testing:

Speed rpm : 100 Minimum rack trave: 8.00 Speed : 300 rom

Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

rpm : 320...450 Speed

FUEL DELIVERY CHARACTERISTICS

1st version

: 1000 Speed rpm

Del.quantity cm3/: 115.5...118.5 1000 s: (113.0...121.0)

cm3 : 5.50 Spread 1000 s: (7.0)

RACK STOP ADJUSTMENT

Speed : 100 rpm

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.00

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 150.0...160.0 1000 s: (147.0...163.0)

Rack travel in mm : 19,00...21.00

LOW IDLE

Speed rpm: 300
Rack travel in mm: 6.40...6.60
Del.quantity cm3/: 13.0...17.0

1000 s: (10.5...19.5)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

D16

Note remarks

: MB 4,0 A 30 Test sheet Edition : 02.10.89

Replaces

Test oil : ISO-4113

Combination no. : 0 403 444 116

Injection pump

Pump designation : PES4MW100/720RS1127

: 0 413 404 103 EP type number

Governor

Governor design. : RQV300...1400MW48-7

: 0 420 083 172 Governer no.

Customer-spec. information Customer : MB-NFZ

Engine : OM 364A

: 70.0 1st version kW : 2800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

: 1-3-4-2 Firing order

: 0-90-180-270 Phasing

Tolerance + - ... : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.00...10.10

Del.quantity cm3/: 6.7...6.9

100 s: (6.5...7.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 7.9...8.1 Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1550 1st speed

: 9.00...9.40 travel mm

: 1450 2nd speed rpm : 8.20...8.40 travel mm

: 550 3rd speed rpm

: 2.80...3.40 travel mm

rpm : 300 4th speed

travel mm : 1.00...1.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1450 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

: 67.0...69.0 Del.quantity 1000 : (65.0...71.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever position degrees: 48...56 Testina: 1st rack travel in: 9.50 rpm : 1450...1460 Speed 2nd rack travel in: 4.00 rpm : 1540...1570 Speed 4th rack travel in: 1650 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 18...26 Setting point w/out bumper spring man : 300 Rack travel in mm: 8.0 Testina: Speed rpm Minimum rack trave: 9.50 : 300 Speed rpm Rack travel in mm : 7.90...8.10 TORQUE CONTROL Torque control curve - 1st version rpm : 1400 1st speed Rack travel in m: 10.00...10.10 2nd speed : 750 rpm Rack travel in m: 10.80...10.90 3rd speed rpm : 950 Rack travel in m: 10.60...10.90 h speed rpm : 1100 4th speed Rack travel in m: 10.20...10.50 START CUT-OUT 1/min: 200 (230) Speed FUEL DELIVERY CHARACTERISTICS 1st version : 750 Speed rpm Del.quantity cm3/: 60.0...62.0 1000 s: (57.0...65.0) cm3 : 5.00 Spread 1000 s: (7.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.50

rpm : 1450...1460

rpm : 100 Speed Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0) LOW IDLE : 300 Speed rpm Rack travel in mm : 7.90...8.10 Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5) cm3 : 3.50Spread 1000 s: (5.50) Remarks:

Speed

STARTING FUEL DELIVERY

Note remarks

Test sheet : MB 4,0 A 29 Edition : 02.10.89

Replaces : -

Test oil : ISO-4113

Combination no. : 0 403 444 117

Injection pump

Pump designation : PES4MW100/720RS1127

EP type number : 0 413 404 103

Governor

Governor design. : RQV300...1400MW48-10

Governer no. : 0 420 083 178

Customer—spec. information Customer : MB-NFZ

Engine : OM 364A

1st version kW : 85.0 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ... : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 7.9...8.1

100 s: (7.7...8.3)

Spread cm3: 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 8.9...9.1

Del.quantity cm3/: 0.9...1.3 100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump with governor

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1550

travel mm : 9.00...9.40 2nd speed rpm : 1450

travel mm : 8.30...8.50

3rd speed rpm : 550

travel mm : 2.80...3.40

4th speed rpm: 300

travel mm : 1.00...1.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm: 1450

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1400

Del.quantity : 79.0...81.0 1000 : (77.0...83.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever position degrees: 48...56 Testina: 1st rack travel in: 10.50 Speed rpm : 1440...1450 2nd rack travel in: 4.00 Speed rpm: 1540...1570 4th rack travel in: 1650 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 18...26 Setting point w/out bumper spring rpm Rack travel in mm: 9.0 Testina: rpm : 100 Speed Minimum rack trave: 10.50 rpm : 300 Speed Rack travel in mm : 8.90...9.10 TORQUE CONTROL Dimension a mm : 1.30 Torque control curve - 1st version 1st speed rpm : 1400 Rack travel in m: 11.50...11.60 rpm : 750 2nd speed Rack travel in m: 12.80...12.90 3rd speed rpm: 950 Rack travel in m: 12.40...12.60 4th speed rpm : 1100 Rack travel in m: 12.00...12.30 START CUT-OUT 1/min : 200 (230) Speed FUEL DELIVERY CHARACTERISTICS 1st version : 750 Speed rpm Del.quantity cm3/: 75.0...77.0 1000 s: (73.0...79.0) cm3 : 5.00Spread 1000 s: (7.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.50

rpm : 1440...1450

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0) LOW IDLE rpm : 300 Speed Rack travel in mm : 8.90...9.10 Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5) cm3 : 3.50 Spread 1000 s: (5.50) Remarks:

Speed

STARTING FUEL DELIVERY

Note remarks

: MB 6,0 D 47 Test sheet Edition : 13.06.88

Replaces

Test oil : ISO-4113

Combination no. : 0 403 446 156

Injection pump

Pump designation : PES6MW100/720RS1120

EP type number : 0 413 406 112

Governor

Governor design. : RQV300...1300MW59

Governer no. : 0 420 083 077

Customer-spec. information

Customer : DB

Engine : 0M366LA

1st version kW : 141.7 : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 8.6...8.8

100 s: (8.4...9.0)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 300.0 2nd speed Rack travel in mm: 6.0...6.1 Del.quantity cm3/: 0.9...1.3

100 s: (0.7...1.5)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1450 1st speed

: 9.50...9.90 travel mm rpm : 1350 2nd speed

: 8.50...8.70 travel mm

3rd speed rpm : 450 : 2.40...3.00 travel mm

4th speed

rpm : 300 : 1.20...1.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 Speed rpm : 1340 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1300 Aneroid pressure h: 700

Del.quantity : 86.0...88.0 1000 : (84.0...90.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version Control Lever position degrees: 48...56 Testina: 1st rack travel in: 11.10 Speed rpm : 1340...1350 2nd rack travel in: 4.00 Speed rpm : 1440...1470 4th rack travel in: 1530 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 16...24 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 6.0 Testing: Speed : 100 rom Minimum rack trave: 8.00 : 300 rpm Speed Rack travel in mm : 6.00...6.10 CONSTANT REGULATION rpm : 320...550 Speed Aneroid/Altitude Compensator Test 1st version Setting pm : 500 hPa : 260 Speed rpm Pressure Rack travel mm : 11.00...11.10 Measurement 1/min: 500 Speed 1st pressure hPa : 700 Rack travel in m: 12.00...12.10 2nd pressure hPa : -Rack travel in m: 10.80...10.90 3rd pressure hPa : 310 Rack travel in m: 11.70...12.00 START CUT-OUT 1/min: 230 (250) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 rpm : 750 Speed Del.quantity cm3/: 75.5...78.5 1000 s: (73.0...81.0)

Spread cm3: 5.00 1000 s: (7.0) Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 47.0...49.0 1000 s: (45.0...51.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.10
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 83.0...93.0 1000 s: (80.0...96.0)

LOW IDLE

Remarks:

Note remarks

: MB 6,0 D 26 Test sheet Edition : 06.10.89 : 29.04.88 Replaces : ISO-4113 Test oil

Combination no. : 0 403 446 177

Injection pump

Pump designation : PES6MW100/720RS1144

EP type number : 0 413 406 138

Governor

Governor design. : RQV300...1300MW48 Governer no. : 0 420 083 066

Customer-spec. information : DB Customer

: 0M366A Engine

: 125.0 1st version kW Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm: 11.00...11.10

Del.quantity cm3/: 7.7...7.9

100 s: (7.5...8.1)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 7.8...7.9 Del.quantity cm3/: 0.9...1.3

100 s: (0.6...1.5) cm3 : 0.3

Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1430

: 9.30...9.70 travel mm

rpm : 1340 2nd speed

travel mm : 8.50...8.70 3rd speed

rpm : 500 : 2.70...3.30 travel mm

rpm : 300 4th speed : 1.20...1.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1280

Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed

: 77.0...79.0 Del.quantity 1000 : (75.0...81.0)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

Control Lever position degrees: 50...58 Testing: 1st rack travel in: 10.00 rpm : 1340...1350 2nd rack travel in: 4.00 Speed rpm : 1425...1455 4th rack travel in: 1550 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 18...26 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 7.8 Testina: rpm : 100 Speed Minimum rack trave: 8.70 rpm : 300 Speed Rack travel in mm : 7.80...7.90 CONSTANT REGULATION rpm : 330...500 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 11.00...11.10 ad speed rpm : 800 2nd speed rpm Rack travel in m: 11.80...12.00 : 585 3rd speed rpm Rack travel in m: 12.00...12.20 rpm : 1100 4th speed Rack travel in m: 11.00...11.10 START CUT-OUT 1/min: 230 (250) Speed FUEL DELIVERY CHARACTERISTICS 1st version : 800 Speed rpm Del.quantity cm3/: 76.0...78.0 1000 s: (74.0...80.0) cm3 : 5.00Spread 1000 s: (7.0) : 585 Speed rpm Del.quantity cm3/: 68.5...71.5 1000 s: (66.0...74.0) cm3 : 5.00 Spread 1000 s: (7.00)

1st version 1mm rack travel less than full load rack tr: 10.00 rpm : 1340...1350 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0) LOW IDLE rpm : 300 Speed Rack travel in mm : 7.80...7.90 Del.quantity cm3/ : 9.0...13.0 1000 s: (6.5...15.5) cm3 : 3.50Spread 1000 s: (5.50) Remarks:

Note remarks

: MB 6,0 0 77 : 02.10.89 Test sheet Egition

Replaces

: ISO-4113 Test oil

Combination no. : 0 403 446 225

Injection pump

Pump designation : PES6MW100/720RS1144-

: 0 413 406 159 EP type number

Governor

Governor design. : RQV300...1400MW48-11

: 0 420 083 190 Governer no.

Customer-spec. information : MB-NFZ Customer

Engine : 0M366A

: 125.0 1st version kW : 2800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

: 1 680 750 015 Test Lines

Outside diameter

x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

BASIC SETTING

rpm: 1400 1st speed

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 7.5...7.7

100 s: (7.3...7.9)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm: 7.8...8.3 Del.quantity cm3/: 0.9...1.3

100 s: (0.6...1.5)

cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1550

: 9.20...9.60 travel mm

2nd speed rpm : 1450

: 8.30...8.50 travel mm

rpm : 550 3rd speed

: 2.80...3.40 travel mm rpm : 300

4th speed

: 1.00...1.40 travel mm

GUIDE SLEEVE POSITION

Control-Lever position Degree: -1

rpm : 1450 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

Del.quantity : 75.0...77.0 1000 : (73.0...79.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control Lever position degrees: 48...56 Testing: 1st rack travel in: 9.90 rpm : 1440...1450 Speed 2nd rack travel in: 4.00 rom : 1530...1560 Speed 4th rack travel in: 1650 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 16...24 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 8.0 Testing: : 100 Speed rpm Minimum rack trave: 9.50 : 300 rom Rack travel in mm : 7.80...8.30 TORQUE CONTROL Dimension a mm : 0.60 Torque control curve - 1st version 1st speed rpm : 1400 Rack travel in m: 10.90...11.00 2nd speed rpm : 800 Rack travel in m: 11.50...11.70 3rd speed rpm : 1000 Rack travel in m: 11.10...11.40 START CUT-OUT 1/min: 230 (250) Speed FUEL DELIVERY CHARACTERISTICS 1st version : 800 Speed rpm Del.quantity cm3/: 67.5...70.5 1000 s: (65.0...73.0) cm3 : 5.00Spread 1000 s: (7.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.90 rpm : 1440...1450 Speed

Speed rpm : 100 Del.quantity cm3/ : 80.0...90.0 1000 s: (77.0...93.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.80...8.30
Del.quantity cm3/: 9.0...13.0
1000 s: (6.5...15.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

STARTING FUEL DELIVERY

Note remarks

Test sheet : MB 6,0 D 71 Edition : 13.10.89

Replaces

: ISO-4113 Test oil

Combination no. : 0 403 446 226

Injection pump

: PES6MW100/720RS1131-Pump designation

EP type number : 0 413 406 165

Governor

Governor design. : RQ300/1300MW105 : 0 420 082 039 Governer no.

Customer-spec. information Customer : DB-NKW

: 0M366LA Engine

: 177.0 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C . : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm : 14.60...14.70

Del.quantity cm3/: 12.0...12.2

100 s: (11.8...12.4)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6)

Spread cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1460

: 9.70...10.10 travel mm

rpm : 1360 2nd speed

: 7.20...7.40 travel mm

rpm : 520 3rd speed

: 4.00...4.60 travel mm

rpm : 300 4th speed

: 1.30...1.70 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 1200 Speed

Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed Aneroid pressure h: 1000

Del.quantity : 120.0...122.0 1000 : (118.0...124.0)

cm3 : 3.50 Spread

1000 : (6.00)

RATED SPEED

1st version Control Lever position degrees: 38...46 Setting point: Speed rpm Rack travel in mm: 15.5 Testing: 1st rack travel in: 13.60 rpm : 1345...1360 Speed 2nd rack travel in: 4.00 rpm : 1450...1480 Speed 4th rack travel in: 1550 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 8...16 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 6.4 Testing: Speed : 100 rpm Minimum rack trave: 9.00 rpm : 300 Speed Rack travel in mm : 6.30...6.50 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed man Pressure hPa : -Rack travel mm : 10.60...10.70 Measurement 1/min: 500 Speed 1st pressure hPa : 200 Rack travel in m: 10.90...11.10 2nd pressure hPa : 500 Rack travel in m: 13.50...13.70 3rd pressure hPa : 1000 Rack travel in m: 14.60...14.70 START CUT-OUT 1/min: 180 (200) Speed

FUEL DELIVERY CHARACTERISTICS

rpm : 750

Aneroid pressure h: 1000

Del.quantity cm3/: 111.0...115.0 1000 s: (109.0...117.0) cm3 : 5.00 1000 s: (7.0) Spread Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 41.0...43.0 1000 s: (39.0...45.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.60 Speed rpm : 1345...1360 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 100.0...110.0 1000 s: (97.0...113.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) cm3 : 3.50Spread 1000 s: (5.50) Remarks:

Speed

1st version

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 4.00...4.10 : (3.95...4.15) Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order Test sheet : IHC 7,6 U : 13.10.89 Edition Replaces : 0-60-120-180-240-300 : ISO-4113 Phasing Test oil Combination no. : 0 403 446 227 Tolerance + -. .: 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6MW100/320RS1182 : D 413 406 167 rpm: 800 EP type number 1st speed Governor Governor design. : RQV350...1200MW46-19 Rack travel in mm : 12.90...13.00 : 0 420 083 191 Governer no. Del.quantity cm3/: 13.6...13.8 Customer-spec. information 100 s: (13.4...14.0) : NAVISTAR Customer cm3 : 0.3: DTA-466 Spread Engine 100 s: (0.6) : 182.0 1st version kW : 2400 Rated speed rpm : 350.0 2nd speed Rack travel in mm: 6.3...6.5 TEST BENCH REQUIREMENTS Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2) Test oil cm3 : 0.3inlet temp. , C : 38...42 Spread 100 s: (0.5) Overflow valve : 2 417 413 038 (B) Setting of injection pump with governor Inlet press., bar: 2.80 GUIDE SLEEVE TRAVEL rpm : 1350 Test nozzle holder 1st speed : 8.30...8.50 : 1 688 901 101 assembly travel mm 2nd speed rpm : 1460 : 9.10...9.50 travel mm Openina : 207...210 rpm : 550 pressure, bar 3rd speed : 3.10...3.70 rpm : 350 : 1.30...1.70 travel mm Orifice plate 4th speed diameter mm : 0,6 travel mm FULL LOAD DELIV. AT FULL LOAD STOP Test lines : 1 680 750 008 1st version rpm : 800 Outside diameter Speed Aneroid pressure h: 800 x Wall thickness : 136.5...138.5 : 6.00X2.00X600 Del.quantity x Length mm 1000 : (134.5...140.5) : 3.50 (A) Injection pump setting values cm3 Spread Insp. values in parentheses Set equal delivery quant. 1000 : (6.00) RATED SPEED per values

> 1st version Control lever

position degrees: 43...51

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Testing: 1st rack travel in: 11.90 rpm : 1260...1280 Speed 2nd rack travel in: 4.00 rpm : 1395...1405 Speed 4th rack travel in: 1500 Speed rpm : 0.00...1.00 LOW IDLE 1 Control Lever position degrees: 8...16 Setting point w/out bumper spring : 350 rpm Rack travel in mm: 6.4 Testing: rpm : 100 Speed Minimum rack trave: 9.00 : 350 Speed rpm Rack travel in mm : 6.30...6.50 CONSTANT REGULATION rpm : 300...450 Speed Aneroid/Altitude Compensator Test 1st version Settina Speed : 800 rpm hPa : 220 Pressure : 11.00...11.10 Rack travel mm Measurement Speed 1/min: 800 1st pressure hPa :-Rack travel in m: 10.20...10.40 2nd pressure hPa : 450 Rack travel in m: 12.10...12.40 3rd pressure hPa : 800 Rack travel in m: 12.90...13.00 START CUT-OUT 1/min: 180 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 800

1000 s: (7.0)

Aneroid pressure h: -

rpm : 500 Speed Del.quantity cm3/: 88.0...90.0 1000 s: (86.0...92.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.90 rpm : 1260...1280 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 140.0...180.0 1000 s: (137.0...183.0)

Rack travel in mm: 19.00...21.00

LOW IDLE

rpm : 350 Speed

Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) Spread cm3: 3.50

1000 s: (5.50)

Remarks:

Only perform pump setting with original overflow valve without IH hose and restrictor 1.2 mm diameter. Before checking sleeve position, first adjust latching.

In unlatched condition, do not operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before shutoff.

Note remarks

Test sheet : IHC 7,6 U 1 : 02.10.89 Edition

Replaces

: ISO-4113 Test oil

: 0 403 446 228 Combination no.

Injection pump

Pump designation : PES6MW100/320RS1182

EP type number : 0 413 406 167

Governor

Governor design. : RQV350...1300MW46-20

: 0 420 083 192 Governer no.

: 1815267C91 Cust. part no.

Customer—spec. information Customer : NAVISTAR

: DTA-466 Engine

1st version kW : 156.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10

: (3.95...4.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 11.9...12.1

100 s: (11.7...12.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm: 6.2...6.4 Del.quantity cm3/: 1.4...1.8

100 s: (1.1...2.0)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1460 1st speed

9.10...9.50 travel mm

rpm : 1350 2nd speed

: 8.30...8.50 travel mm rpm : 550

3rd speed : 3.10...3.70 travel mm

rpm : 350 4th speed

: 1.30...1.70 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 800

: 119.0...121.0 1000 : (117.0...123.0) Del.quantity

: 3.50 cm3 Spread

: (6.00) 1000

RATED SPEED

1st version Control lever

position degrees: 43...51

Testing:

1st rack travel in: 10.90

rpm : 1360...1380 Speed

2nd rack travel in: 4.00

rpm : 1480...1490 Speed

4th rack travel in: 1550

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 9...17

Setting point w/out bumper spring

rpm : 350 Rack travel in mm: 6.3

Testing:

Speed rpm : 100 Minimum rack trave: 9.00

rpm : 350

Rack travel in mm : 6.20...6.40

CONSTANT REGULATION

rpm : 300...450 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 800 Pressure

: 11.90...12.00 Rack travel mm

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 10.20...10.30

2nd pressure hPa : 165
Rack travel in m: 10.70...10.80
3rd pressure hPa : 360

Rack travel in m: 11.30...11.60

START CUT-OUT

1/min: 180 (200) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800 : 1300 Speed rpm

Del.quantity cm3/: 120.0...123.0 1000 s: (117.5...125.5) Spread cm3 : 5.00

1000 s: (7.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 88.0...90.0 1000 s: (86.0...92.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90

rpm : 1360...1380 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 140.0...180.0

1000 s: (137.0...183.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 350 Speed

Rack travel in mm : 6.20...6.40 Del.quantity cm3/: 14.0...18.0 1000 s: (11.5...20.5)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

: I.H.C. #1815267C91

Only perform pump setting with original overflow valve without IH hose and restrictor 1.2 mm diameter. Before checking sleeve position,

first adjust latching.

In unlatched condition, do not operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before shutoff.

Note remarks

Test sheet : IHC 7,6 U 2 : 02.10.89 Edition

Replaces

: ISO-4113 Test oil

: 0 403 446 229 Combination no.

Injection pump

Pump designation : PES6MW100/320RS1182

: 0 413 406 167 EP type number

Governor

Governor design. : RQV350...1200MW64-1

: 0 420 083 193 Governer no.

Cust. part no. : 1815224C91

Customer-spec. information Customer : NAVISTAR

: DTA-466 Engine

: 164.0 1st version kW : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 4.00...4.10 Prestroke mm

: (3.95...4.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Phasing

:: 0.50 (0.75) Tolerance + -.,

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 11.90...12.00

Del.guantity cm3/: 11.9...12.1

100 s: (11.7...12.3)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 350.0 2nd speed

Rack travel in mm: 6.2...6.4 Del.quantity cm3/: 1.4...1.8

100 s: (1.1...2.0)

cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1350 1st speed

travel mm : 8.30...8.50

rpm : 1460 2nd speed

travel mm : 9.10...9.50

3rd speed

rpm : 550 : 3.10...3.70 rpm : 350 travel mm

4th speed

: 1.30...1.70 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed

Aneroid pressure h: 800

: 119.5...121.5 Del.quantity 1000 : (117.5...123.5)

: 3.50 cm3

1000 : (6.00)

RATED SPEED

Spread

1st version

Control lever position degrees: 43...51 Testing: 1st rack travel in: 10.90 rpm : 1255...1275 Speed 2nd rack travel in: 4.00 : 1375...1385 Speed rpm 4th rack travel in: 1500 : 0.00...1.00 Speed rom LOW IDLE 1 Control Lever position degrees: 10...18 Setting point w/out bumper spring rom Rack travel in mm: 6.3 Testina: Speed rpm : 100 Minimum rack trave: 9.00 Speed : 350 rpm Rack travel in mm : 6.20...6.40 CONSTANT REGULATION rpm : 360...450 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 11.90...12.00 : 800 2nd speed rpm Rack travel in m: 12.20...12.30 rpm : 1150 3rd speed Rack travel in m: 11.90...12.00 4th speed rpm : 950 Rack travel in m: 12.20...12.30 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 215 Pressure Rack travel mm : 10.90...11.00 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.40...10.50 2nd pressure hPa : 400 Rack travel in m: 11.70...12.00 3rd pressure hPa : 800 Rack travel in m: 12.20...12.30

1/min : 280 (290) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 800 : 800 Speed rpm Del.quantity cm3/: 122.0...126.0 1000 s: (120.0...128.0) cm3 : 5.00Spread 1000 s: (7.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 91.0...93.0 1000 s: (89.0...95.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.90 rpm : 1255...1275 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 140.0...180.0 1000 s: (137.0...183.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 350 Rack travel in mm : 6.20...6.40 Del.quantity cm3/: 14.0...18.0 cm3 : 3.50Spread 1000 s: (5.50)

1000 s: (11.5...20.5)

Remarks:

: I.H.C. #1815224C91

Only perform pump setting with original overflow valve without IH hose and restrictor 1.2 mm diameter. Before checking sleeve position, first adjust latching.

In unlatched condition, do not operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before shutoff.

START CUT-OUT

Note remarks

: MB 8,7 p 2 Test sheet Edition : 20.6.88 : 12.9.86 Replaces Test oil : ISO-4113

Combination no. : 0 403 546 008

Injection pump

Pump designation : PE6MW100/720RS1126

EP type number : 0 413 506 101

Governor

Governor design: RQ300/1250MW12-2

: 0 420 082 020 Governer no.

Customer-spec. information

: DAIMLER BENZ Customer

Engine : 0M360A

1st version kW : 147.00 : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C . : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32
Prestroke mm : 3.80...3.90
: (3.75...3.95)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 12.90...13.00

Del.guantity cm3/: 9.70...9.90

100 s: (9.50...10.10)

cm3 : 0.35Spread

100 s: (0.60)

rpm : 300 2nd speed

Rack travel in mm : 8.60...8.70 Del.quantity cm3/: 1.00...1.40 100 s: (0.70...1.60) Spread cm3: 0.35

100 s: (0.50)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -2

rpm : 650 Speed

Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed

: 97.00...99.00 Del.quantity 1000 : (95.0...101.0)

cm3 : 3.50 1000 : (6.00) Spread

RATED SPEED

1st version

Setting point:

Speed rom : 650 Rack travel in mm: 13.5

Testing:

1st rack travel in: 11.90

rpm : 1295...1310 Speed

2nd rack travel in: 4.00

rpm : 1415...1445 Speed 3rd rack travel in: 0.10...1.00

rpm : 1550 Speed

LOW IDLE 1

Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 8.60...8.70

Testing: Speed Speed rpm: 220
Minimum rack trave: 10.40
Speed rpm: 300
Rack travel in mm: 8.60...8.70
Rack travel in mm: 2.00
Speed rpm: 430...470

Remarks:

Note remarks

: YDA 7,3 d Test sheet : 08.08.89 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 9 400 030 451

Injection pump

Pump designation : PES6A95D310/3LS2636

Governor

Governor design. : RSV250...900A7B685L

Customer-spec. information

: RUSTON & HORNSBY Customer

: 6 YDX MK 2 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.5

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6,00x1,50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25 : (2,10...2,30) Rack travel in mm : 9,00...12,00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + --, : 0,50 (0,75)

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm: 9,00

Del.quantity cm3/: 6,2...7,7

100 s: (-)

Spread cm3 : 0.4

100 s: (-)

rpm : 200 2nd speed Rack travel in mm: 6,00

Del.quantity cm3/: 0,4...1,5

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 750 Speed

Del.quantity : 121,0...25,0)

RATED SPEED

1st version

Control lever

position degrees: 38...46

Testing:

1st rack travel in: 11,0

Speed rpm : 760...765

2nd rack travel in: 5,50 Speed rpm : <790

4th rack travel in: 930 rpm : 0,30...1,70 Speed

LOW IDLE 1 Control lever

position degrees: 8...16

Setting point w/out bumper spring

rpm : 250

Rack travel in mm: 6,00

Testing:

Speed rpm : 100 Minimum rack trave: 17,00 Speed rpm : 250
Rack travel in mm : 5,80...6,20
Rack travel in mm : 2,00
Speed rpm : 420...470

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8,00 Speed rpm : 760...765

HIGH IDLE

1st version

Speed rpm : <800 Rack travel in mm : 5,50

Remarks:

Note remarks

: MWM 3,9 a Test sheet Edition : 15.08.89 Replaces : 4.85 : ISO-4113 Test oil

: 9 400 085 240 Combination no.

Injection pump

Pump designation : PES4A90D32ORS2702 EP type number : 9 400 083 095

Governor

Governor design. : RSV350...1150A2B2129

-4R

: 9 420 083 193 Governer no.

Customer-spec. information Customer

: D 229-4 Engine

: 75.0 1st version kW : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 003

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.65...2.75 Prestroke mm

: (2.60...2.80)

Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00 & maximum rack tra: 21.00

Difference., CS : 3.00...4.00

BASIC SETTING

rpm: 1150 1st speed

Rack travel in mm : 9.00...9.10

Del.quantity cm3/: 6.3...6.4

100 s: (6.1...6.5)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 350.0 Rack travel in mm : 5.6...5.8 Del.quantity cm3/ : 1.0...1.4

100 s: (0.8...1.6)

cm3 : 0.2 Spread

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed

: 63.5...64.5 Del.quantity 1000 : (61.5...66.5)

: 3.00 cm3 Spread

1000 : (5.00)

RATED SPEED

1st version

Control lever position degrees: 45...53 Testing: 1st rack travel in: 8.00 rpm : 1190...1200 Speed 2nd rack travel in: 4.00 Speed rpm : 1230...1260 4th rack travel in: 1400 Speed rpm : 0.30...1.70LOW IDLE 1 Control Lever position degrees: 20...28 Setting point w/out bumper spring rom Rack travel in mm: 5.2 Testina: : 100 Speed rpm Minimum rack trave: 19.00 : 350 Speed rpm Rack travel in mm : 5.60...5.80 Rack travel in mm : 2.00 rom : 560...620 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 1150 1st speed Rack travel in m: 9.00...9.10 2nd speed rpm : 500 Rack travel in m: 10.10...10.20 rpm : 800 3rd speed Rack travel in m: 9.70...9.90 rpm : 1000 4th speed Rack travel in m: 9.10...9.40 FUEL DELIVERY CHARACTERISTICS 1st version : 500 Speed rpm Del.quantity cm3/: 61.0...63.0 1000 s: (59.5...64.5) rpm : 800 Speed Del.quantity cm3/: 66.0...68.0 1000 s: (63.5...70.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8.00 rpm : 1190...1200 Speed

Speed rpm : 100 Rack travel in mm : 19.00...21.00 Remarks:

: VALMET

APPLICATION

Tractor (tractor engines)

STARTING FUEL DELIVERY

Note remarks

Test sheet : MB 6,0 e Edition : 01.09.88 : 8.1.88 Replaces Test oil : ISO-4113

: 9 400 085 288 Combination no.

Injection pump

Pump designation : PES6A90D410RS2596-1

EP type number : 9 400 084 008

Governor

Governor design. : RQV300...1300AB1066-

: 9 420 080 230 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

: 0M 366 A Engine

1st version kW : 127.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm

: (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 13.10...13.20

Del.quantity cm3/: 8.6...8.7

100 s: (8.4...8.9)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 300.0 Rack travel in mm : 8.4...8.6 Del.guantity cm3/: 1.0...1.4

100 s: (0.8...1.6)

cm3 : 0.2Spread 100 s: (0.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1375 1st speed

: 8.40...8.50 travel mm rpm : 300 2nd speed : 0.90...1.30 travel mm

rpm : 500 3rd speed

: 2.20...2.60 travel mm

rpm : 800 4th speed

: 4.30...4.70 travel mm rpm : 1100

5th speed : 6.10...6.40 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1375

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed Aneroid pressure h: 1000

cm3Spread : 3.00

1000 : (5.00)

RATED SPEED

1st version Control lever

position degrees: 60...68

Testing:

1st rack travel in: 12.10

rpm : 1340...1350 Speed

2nd rack travel in: 4.00

: 1470...1500 Speed rpm

4th rack travel in: 1600

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 19...27

Testing:

: 100 Speed man Minimum rack trave: 10.00 rpm : 300 Speed

Rack travel in mm: 8.40...8.60

Rack travel in mm: 2.00 : 570...630 Speed rom

CONSTANT REGULATION

Speed rpm : 590...660

TORQUE CONTROL

Dimension a mm : 1.00

Torque control curve - 1st version

1st speed rpm : 1300 Rack travel in m: 13.10...13.20

2nd speed rpm : 800

Rack travel in m: 14.10...14.20

rpm : 1000 3rd speed

Rack travel in m: 13.90...14.10

4th speed rpm : 1150

Rack travel in m: 13.30...13.60

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm

hPa : 1000 Pressure

Rack travel mm : 14.10...14.20

Measurement

1/min : 500Speed

1st pressure hPa : -

Rack travel in m: 12.80...12.90

2nd pressure hPa : 750

Rack travel in m: 13.90...14.00

3rd pressure hPa : 650

Rack travel in m: 13.20...13.40

START CUT-OUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 : 800 Speed rpm

Del.quantity cm3/: 89.0...91.0 1000 s: (86.5...93.5)

Aneroid pressure h: 1000

Speed rpm : 1000 Del.quantity cm3/: 90.0...92.0 1000 s: (87.5...94.5)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 66.5...68.5 1000 s: (64.5...70.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.10

rpm : 1340...1350 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 71.0...81.0

1000 s: (68.0...84.0)

Rack travel in mm : 14.70...15.70

Remarks:

Note remarks

: FOR 6,6 L 1 Test sheet : 02.05.89 Edition : 1.9.88 Replaces Test oil : ISO-4113

Combination no. : 9 400 085 298

Injection pump

Pump designation : PES6A95D41ORS2758 EP type number : 9 400 084 016

Governor

: RQV350...1300AB1220-Governor design.

: 9 420 080 253 Governer no.

Customer-spec. information : FORD FNH Customer

: 6.6 L Engine

: 123.0 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 017

Opening

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.15...3.25 Prestroke mm : (3.10...3.30)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - 2 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 9.8...10.0

100 s: (9.6...10.2)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 7.1...7.3 Del.quantity cm3/: 2.0...2.4 100 s: (1.7...2.6)

cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1335 1st speed

: 8.00...8.10 travel mm

rpm : 350 2nd speed : 1.20...1.60 travel mm

rpm : 500 3rd speed

travel mm

: 2.90...3.30

4th speed

rpm : 1000 : 5.30...5.70 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1530 Speed

Rack travel in mm: 8.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300Speed Aneroid pressure h: 900

Del.quantity : 98.0...02.0) cm3 : 3.50 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 112...120 Testing: 1st rack travel in: 12.20 rom : 1360...1370 Speed 2nd rack travel in: 4.00 Speed rpm : 1500...1530 4th rack travel in: 1650 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 67...75 Testing: : 100 Speed rom Minimum rack trave: 10.00 Speed rpm : 350
Rack travel in mm : 7.10...7.30
Rack travel in mm : 2.00 Speed rpm : 680...740 CONSTANT REGULATION rpm : 370...440 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : 900 Pressure Rack travel mm : 13.20...13.30 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.50...10.70 2nd pressure hPa : 353 Rack travel in m: 11.20...11.30 3rd pressure hPa : 473 Rack travel in m: 12.40...12.80

1st version Aneroid pressure h: 900 Speed rpm : 800 Del.quantity cm3/: 87.0...91.0 1000 s: (85.0...93.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 55.0...57.0 1000 s: (53.0...59.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.20 rpm : 1360...1370 Speed INTERMEDIATE RATED SPEED Rack travel in mm: 4.00 STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 145.0...165.0 1000 s: (140.0...170.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 350
Rack travel in mm : 7.10...7.30
Del.quantity cm3/ : 20.0...24.0 1000 s: (17.5...26.5) cm3 : 3.50Spread 1000 s: (5.50) Remarks: Set shutoff stop 1.5...2.0 mm before shutoff.

Speed

START CUT-OUT

1/min: 270 (290)

FUEL DELIVERY CHARACTERISTICS

Note remarks

: MB 6,0 g : 15.08.89 Test sheet Edition

Replaces

: ISO-4113 Test oil

: 9 400 085 305 Combination no.

Injection pump

: PES6A95D410RS2772 Pump designation : 9 400 084 018 EP type number

Governor

: RQV300...1300AB1066-Governor design.

: 9 420 080 265 Governer no.

Customer-spec, information

: DAIMLER-BENZ Customer

: OM 366 A Engine

: 125.0 : 2600 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 1 417 413 006

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.20...3.30 Prestroke mm

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.40...10.50

Del.quantity cm3/: 8.7...8.9

100 s: (8.5...9.1)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 6.9...7.1 Del.quantity cm3/: 1.2...1.8

100 s: (1.0...2.0)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

0.80...1.30 travel mm : 500 2nd speed rpm

: 2.30...2.80 travel mm

: 750 3rd speed rpm

: 4.10...4.30 travel mm

: 1500 4th speed rpm

: 8.50...8.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1500 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

: 87.5...89.5 : (85.5...91.5) Del.quantity 1000

cm3: 3.50 Spread

1000 : (6.00)

RATED SPEED 1st version Control Lever position degrees: 55...63 Testing: 1st rack travel in: 9.40 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1460...1490 Speed 4th rack travel in: 1630 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 12...20 Testing: Speed : 100 rpm Minimum rack trave: 8.00 : 300 Speed rom Rack travel in mm : 6.90...7.10 CONSTANT REGULATION Speed rpm : 420...550 TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 10.40...10.50 od speed rpm : 700 2nd speed Rack travel in m: 10.90...11.00 rpm : 1000 4th speed Rack travel in m: 10.60...10.80 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : 700 Pressure : 10.90...11.00 Rack travel mm Measurement Speed $1/\min : 500$ 1st pressure hPa : -Rack travel in m: 9.50...9.70 2nd pressure hPa : 460

Rack travel in m: 10.70...10.80

Rack travel in m: 9.80...10.00

3rd pressure hPa : 250

START CUT-OUT

1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 Speed : 700 rpm Del.quantity cm3/: 86.5...89.5 1000 s: (84.0...92.0) Aneroid pressure h: 700 Speed : 1000 rpm Del.quantity cm3/: 90.0...93.0 1000 s: (87.5...95.5) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 60.5...62.5 1000 s: (58.5...64.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.40 rpm : 1340...1350 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 100.0...110.0 Rack travel in mm: 13.90...14.10 Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 4,0 f : 15.08.89 Edition Replaces Test oil : ISO-4113 Combination no. : 9 400 085 307 Injection pump Pump designation : PES4A95D410RS2774 : 9 400 084 019 EP type number Governor : RQV300...1300AB1228-Governor design. : 9 420 080 268 Governer no. Customer—spec. information : DAIMLER-BENZ Customer : OM 364 A Engine 1st version kW : 85.0 : 2600 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. .. C : 38...42 Overflow valve : 1 417 413 006 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening : 172...175 pressure, bar Test lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00X2.00X600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

Rack travel in mm : 9.00...12.00 Firing order : 1- 3- 4- 2 Phasing : 0-90-180-270 Tolerance $+ - \dots : 0.50 (0.75)$ Time to cyl. no. : 1BASIC SETTING rpm : 13001st speed Rack travel in mm : 10.60...10.70 Del.quantity cm3/: 9.0...9.2 100 s: (8.8...9.4) Spread cm3 : 0.3100 s: (0.6) 2nd speed rpm : 300.0Rack travel in mm: 6.9...7.1 Del.quantity cm3/: 1.2...1.8 100 s: (1.0...2.0) cm3 : 0.3 100 s: (0.5) Spread (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 300 1st speed : 0.80...1.30 travel mm rpm : 500 2nd speed : 2.30...2.80 travel mm rpm : 750 3rd speed : 4.10...4.30 travel mm : 1500 4th speed rpm : 8.50...8.60 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1500 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1300Aneroid pressure h: 700 Del.quantity : 90.0...94.0) Spread cm3 : 3.50

1000

: (6.00)

per values

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 38...42

: 3.20...3.30

: (3.15...3.45)

RATED SPEED

1st version Control lever

position degrees: 56...64

Testing:

1st rack travel in: 9.60

rpm : 1340...1350 Speed 2nd rack travel in: 4.00

rpm : 1470...1500 Speed

4th rack travel in: 1640

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 12...20

Testing:

: 100 Speed rpm Minimum rack trave: 8.00 : 300 Speed rpm

Rack travel in mm : 6.90...7.10

CONSTANT REGULATION

rpm : 420...550 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 1300

Rack travel in m: 10.60...10.70

2nd speed rpm : 700

Rack travel in m: 11.20...11.30

4th speed rpm : 1000

Rack travel in m: 10.80...11.00

Aneroid/Altitude Compensator Test

1st version Setting

rpm : 500 hPa : 700 Speed rpm Pressure

: 11.20...11.30 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.90...10.10

2nd pressure hPa : 460

Rack travel in m: 11.00...11.10
3rd pressure hPa : 370
Rack travel in m: 10.30...10.50

START CUT-OUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 Speed rpm : 700

Del.quantity cm3/: 92.0...95.0 1000 s: (89.5...97.5)

Aneroid pressure h: 700 Speed : 1000 rpm

Del.quantity cm3/: 90.5...93.5 1000 s: (88.0...96.0)

Aneroid pressure h: -

Speed rpm: 500 Del.quantity cm3/: 67.0...69.0

1000 s: (65.0...71.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.60

rpm : 1340...1350 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 100.0...110.0 Rack travel in mm: 13.90...14.10

Remarks:

Note remarks

Test sheet : MB 6.0 g 1 Edition : 15.08.89

Replaces : -

Test oil : ISO-4113

Combination no. : 9 400 085 308

Injection pump

Pump designation : PES6A95D410RS2772 EP type number : 9 400 084 018

Governor

Governor design. : RQV300...1400AB1065-

18L

Governer no. : 9 420 080 278

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : OM 366

1st version kW : 100.0 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. .. C : 38...42

Overflow valve

: 1 417 413 006

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina .

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 9.40...9.50

Del.quantity cm3/: 6.8...7.0

100 s: (6.6...7.2)

Spread cm3: 0.3

100 s: (0.3)

2nd speed rpm : 300.0 Rack travel in mm : 7.1...7.3 Del.quantity cm3/: 0.9...1.5

100 s: (0.7...1.7)

Spread cm3 : 0.3 100 s: (0.3)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm: 300

travel mm : 0.80...1.30 2nd speed rpm : 500

travel mm : 2.30...2.80 3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm: 1500

travel mm : 8.50...8.60

GUIDE SLEEVE POSITION Control-lever position

tever position 1- Degree:

Speed rpm: 1500

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1400

Del.quantity : 68.0...70.0

1000 : (66.0...72.0)

Spread cm3 : 3.50

1000 : (3.50)

RATED SPEED

1st version Control Lever

position degrees: 55...63

Testing:

1st rack travel in: 8.40

rpm : 1440...1450 Speed

2nd rack travel in: 4.00

Speed rpm : 1520...1550 4th rack travel in: 1660

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 12...20

Testing:

: 100 Speed man Minimum rack trave: 8.50

Speed rpm : 300 Rack travel in mm : 7.10...7.30

CONSTANT REGULATION

rpm : 450...480 Speed

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600 Del.quantity cm3/: 53.5...56.5 1000 s: (51.0...59.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.40

rpm : 1440...1450 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 100.0...110.0

Rack travel in mm : 13.70...13.90

Remarks:

Note remarks

: MB 6,0 g 2 Test sheet Edition : 15.08.89

Replaces

: ISO-4113 Test oil

Combination no. : 9 400 085 310

Injection pump

Pump designation : PES6A95D410RS2772 : 9 400 084 018 EP type number

Governor

: RQV300...1300AB1066-Governor design.

: 9 420 080 279 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

: 0M 366 LA Engine

1st version kW : 155.0 : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp..., C . : 38...42

Overflow valve

: 1 417 413 006

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30

: (3.15...3.35)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Time to cyl. no. : 1

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm : 11.10...11.20

Del.guantity cm3/: 9.5...9.7

100 s: (9.3...9.9)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.0 2nd speed Rack travel in mm: 6.9...7.1 Del.quantity cm3/: 1.2...1.8

100 s: (1.0...2.0)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed : 0.80...1.30 travel mm

2nd speed

rpm : 500 : 2.30...2.80 travel mm rpm : 750

3rd speed

: 4.10...4.30 travel mm

rpm : 1500 4th speed

: 8.50...8.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1500 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 700

Del.quantity : 95.0...97.0 1000 : (93.0...99.0)

: 3.50 Spread cm3

1000 : (6.00) RATED SPEED

1st version

Control lever

position degrees: 55...63

Testing:

1st rack travel in: 10.10

Speed rpm: 1340...1350 2nd rack travel in: 4.00

rpm : 1470...1500 Speed

4th rack travel in: 1640

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 12...20

Testing:

rpm : 100 Speed Minimum rack trave: 8.00 : 300 rpm

Rack travel in mm : 6.90...7.10

CONSTANT REGULATION

rpm : 420...550 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 500 hPa : 700 Speed rpm Pressure

Rack travel mm : 11.10...11.20

Measurement

1/min: 500 Speed

1st pressure hPa : -Rack travel in m: 9.40...9.70

2nd pressure hPa : 450

Rack travel in m: 10.80...10.90

3rd pressure hPa : 250

Rack travel in m: 9.90...10.10

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 : 700 rpm

Del.quantity cm3/: 90.0...93.0 1000 s: (87.5...95.5)

Aneroid pressure h: -

rpm : 500 Speed Del.quantity cm3/: 60.5...62.5 1000 s: (58.5...64.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

rpm : 1340...1350 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 100.0...110.0

Rack travel in mm : 13.90...14.10

Remarks:

BOSCH TNJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : CUM 8,3 b 3 : 28.09.89 : 30.9.88 Edition Replaces Test oil : ISO-4113 Combination no. : 9 400 230 107 Injection pump Pump designation : PES6A100D320/3RS2691 EP type number : 9 410 230 028 Governor Governor design. : RQV350...1200AB1233R : 9 420 231 018 Governer no. Customer spec. information Customer : C.D.C : 6CT830 Engine 1st version kW : 157.0 Rated speed : 2400 TEST BENCH REQUIREMENTS Test oil inlet temp. ., C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 017 assembly Openina . pressure, bar : 207...210 Orifice plate : 0,6 diameter mm : 9 681 271 029 Test Lines Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm

(A) Injection pump setting values

per values

Test pressure, bar: 27...29

BEGINNING OF DELIVERY

Insp. values in parentheses Set equal delivery quant.

: 2.80...2.90 Prestroke mm : (2.75...2.95) Rack travel in mm : 10.50 Firing order : 1-5-3-6-2-4 : 0-60-120-180-240-300 Phasing Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 1 BASIC SETTING rpm: 1200 1st speed Rack travel in mm : 10.80...10.90 Del.quantity cm3/: 11.3...11.5 100 s: (11.1...11.7) cm3 : 0.3Spread 100 s: (0.6) rpm : 350.0 2nd speed Rack travel in mm : 4.6...4.8 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 250 1st speed : 0.00...0.20 travel mm 2nd speed rpm : 350 : 1.00...1.50 rpm : 450 travel mm 3rd speed : 1.90...2.40 travel mm rpm : 1200 4th speed : 6.90...6.90 travel mm rpm : 1350 5th speed : 8.15...8.65 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1435 Speed Rack travel in mm : 6.70...9.30 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1200 Speed

Aneroid pressure h: 700

: 113.0...115.0 Del.quantity 1000 : (111.0...117.0) cm3 : 3.50

Spread : (6.00) 1000

RATED SPEED

1st version Control Lever

position degrees: 40...46

Testina:

1st rack travel in: 9.80

rom : 1240...1250 Speed

2nd rack travel in: 4.00

Speed rpm : 1315...1345 4th rack travel in: 1400

rom : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 9...15 Speed rpm : 350

Speed

Rack travel in mm : 4.60...4.80

Rack travel in mm: 2.00

: 480...540 Speed rpm

Aneroid/Altitude Compensator Test

1st version

Settina

: 500 Speed rpm hPa : 240 Pressure

: 9.70...9.80 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.30...9.50 2nd pressure hPa : 333 Rack travel in m: 10.20...10.60

START CUT-OUT

1/min: 290 (300) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 84.5...88.5 1000 s: (82.5...90.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.80

rpm : 1240...1250 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 150.0...170.0

1000 s: (145.0...175.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

: 350 Speed rpm

Rack travel in mm : 4.60...4.80 Del.quantity cm3/: 16.0...20.0

1000 s: (13.5...22.5)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

: c.b.c. # 3908558

Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

Limit shutoff stop screw to 1.0 mm.

Note remarks

Test sheet : CUM 8,3 a 7 : 20.12.88 Edition : 30.9.88 Replaces Test oil : ISO-4113

: 9 400 230 110 Combination no.

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 030

Governor

Governor design. : RSV450...1100A0c2190

-22R

: 9 420 234 173 Governer no.

Customer-spec. information Customer : C.D.C.

: 6CT830 Engine

: 150.6 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 014 Test lines

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 10.50 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Phasing

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 11.8...12.0

100 s: (11.6...12.2)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 450.0 Rack travel in mm : 5.7...5.9

Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 118.5...120.5 Del.quantity : (116.5...122.5) 1000

cm3 : 3.50Spread

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 42...50

Testing:

1st rack travel in: 11.10

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

Speed rpm : 1195...1225 4th rack travel in: 1300

rom : 0.30...1.40Speed

LOW IDLE 1 Control lever

position degrees: 22...30

Setting point w/out bumper spring

: 450 rpm Rack travel in mm: 5.3

Testing:

Speed rpm : 100 Minimum rack trave: 19.00

: 450 rpm

Rack travel in mm : 5.70...5.90 Rack travel in mm : 2.00

: 500...560 Speed rpm

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100
Rack travel in m: 12.10...12.20
2nd speed rpm : 750

Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

: 750 Speed rpm

Del.quantity cm3/: 133.0...137.0

1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm: 20.00...21.00

LOW IDLE

rpm : 450 Speed

Rack travel in mm : 5.70...5.90

Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

: C.D.C. # 3911542

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in

full-load delivery with torque-control

spring retainer.

Start-of-delivery mark 11, cam angle

after start of delivery cyl. 1

Limit shutoff stop screw to 1.0 mm.

E28

Note remarks

: CUM 8,3 a 8 : 20.12.88 Test sheet Edition

: 30.9.88 Replaces : ISO-4113 Test oil

: 9 400 230 111 Combination no.

Injection pump

Pump designation : PES6A100D320/3RS2691

: 9 410 230 030 EP type number

Governor

: RSV450...1100A0C2190 Governor design.

-23R

: 9 420 234 174 Governer no.

Customer-spec. information Customer : C.D.C.

: 6CT830 Engine

: 134.2 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Phasing

Tolerance + - ., ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 10.1...10.3

100 s: (9.9...10.5)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 450.0 2nd speed

Rack travel in mm: 5.7...5.9

Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2) Spread cm3: 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Del.quantity : 101.0...103.0

1000 : (99.0...105.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 49...57

Testina:

1st rack travel in: 10.20

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1210...1240 Speed

3rd rack travel in: 4.00

: 1215...1245 Speed rpm

4th rack travel in: 1300

: 0.30...1.40 Speed rom

LOW IDLE 1 Control Lever

position degrees: 31...39

Setting point w/out bumper spring

rpm : 450 Speed Rack travel in mm: 5.3

Testing:

: 100 rpm Speed

Minimum rack trave: 19.00

Speed rom : 450

Rack travel in mm : 5.70...5.90

Rack travel in mm : 2.00

: 535...595 Speed rom

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 11.20...11.30 ad speed rpm : 750

2nd speed rpm

Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750 Del.quantity cm3/ : 110.5...114.5

1000 s: (108.5...116.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

: 450 Speed rom

F02

Rack travel in mm : 5.70...5.90 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

cm3 : 3.50 1000 s: (5.50) Spread

Remarks:

: C.D.C. # 3911545

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

Limit shutoff stop screw to 1.0 mm.

Note inst. in remarks column

Test sheet : VMA 2,2 D : 09.11.89 Edition replaces : 03.12.86 : ISO 4113 Calibrating oil

: VE 4/10F2100 L168-1 Injection pump : 0 460 404 042 Type number

Customer-specific information : MOTORI Customer

: HR 492 HJ Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. ... C

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening

bar: 147...150 pressure

Test ini. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery Prestroke mm : -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing device travel:

1/min: 1000 Scieed Charge press. hPa: 800 Setting value mm: 1,8...2,2

Supply-pump pressure:

Speed 1/min: 1000 Charge press. hPa: 800 Setting value bar: 3,1...3,7 Full-load del. with charge press.:

1/min: 1500 Charge press. hPa: 800 Del.quantity cm3/ 1000H.: 60,5...61,5

cm3/:3,0Dispersion 1000H : -

Full-load del. w/out charge press.:

1/min: 600 Del.quantity cm3/

1000H.: 40,5...41,5

Low-idle speed regulation:

1/min: 400 Speed

Del.quantity cm3/ 1000H: 13,0...17,0 Dispersion cm3/: 3,0 1000H.: -

Full-load speed regulation:

1/min: 2300 Speed Charge press. hPa: 800 Del.quantity cm3/

1000H: 27,0...33,0

Start:

Speed 1/min: 100 Del.quantity cm3/1000H.: 37,0 mind

Load-dependent start of delivery:

1/min: 1500 Speed

Inspection pump test specifications Test specifications in parentheses

Timing device characteristic:

1st speed 1/min: 1000 Charge press. hPa: 800 TD travel

mm: 1,8...2,2 mm: (1,3...2,7)

2nd speed 1/min: 1500 Charge press. hPa: 800

mm: 4,4...5,2 mm: (4,1...5,5) TD travel

1/min: 2100 3rd speed Charge press. hPa: 800 mm: 7,6...8,4 TD travel mm: (7,3...8,7)

Supply-pump pressure characteristic:

	† Del.quantity cm3/: 40,541,5 1000H: (38,543,5)
1st speed 1/min: 600	† 1000H: (38,543,5)
Charge press. hPa: 800	+
Supply-pump	† Zero delivery (stop):
pressure bar: 1,82,4 2nd speed 1/min: 1000	+
2nd speed 1/min: 1000	+
Charge press. hPa: 800	† Electr. shutoff:
Supply-pump	+
pressure bar: 3,13,7 3rd speed 1/min: 2100	Speed 1/min: 400
3rd speed 1/min: 2100	+ ELAB volt: -
Charge press. hPa: 800	Del.quantity cm3/: 0,03,0 max. 1000H.: -
Supply-pump	+ max. 1000H.: -
pressure bar: 6,77,5	+
	+ Idle delivery:
Overflow quantity at overflow valve:	+
•	+ 1st speed 1/min: 400
1st speed 1/min: 600	Del.quantity cm3/: 13,017, 1000H.: (10,020,0
Charge press. hPa: 800	+ 1000H.: (10,020,0
Oveflow : 4183	2nd speed 1/min: 450 Del.quantity cm3/: 2,58,5 1000H.: (0,510,5)
quantity cm3/10s: (2698) 2nd speed 1/min: 2100	→ Del.quantity cm3/: 2,58,5
2nd speed 1/min: 2100	1000H.: (0,510,5)
Charge press. hPa: 800	+ 3rd speed 1/min: 600
Overflow : 55138	+ Del.quantity cm3/: 0,02,0
quantity cm3/10s: (40153)	+ 1000H.: -
quariot by bijar the control of	+
Delivery-quant. and breakaway char.:	+ Automatic starting fuel delivery:
	+
1st speed 1/min: 700	+ 1st speed 1/min: 400
Charge-air pressure-setting	+ Del.quantity cm3/:-
point hPa: 400	- Del.quantity cm3/: - - ind. 1000H: 45,0
LDA stroke mm: 6,1	+
Del.quantity cm3/: 52,053,0 1000H.: (50,055,0)	+ 2nd speed 1/min: 500
1000H.: (50,055,0)	+ Del.quantity cm3/: -
2nd speed 1/min: 2450	+ max. 1000H: 55,0
Charge press. hPa: 800	+
Del.quantity cm3/: 1,09,0	<pre>+ Shutoff electromagnet:</pre>
1000H.: (0,59,5)	+
3rd speed 1/min: 2300	+ Cut-in
Charge press. hPa: 800	+ min. voltage : 10,0
Del.quantity cm3/: 27,033,0	+ Rated voltage : 12,0
1000H.: (26,034,0)	+
4th speed 1/min: 2100	+ Mounting and assembly dimensions:
Charge press. hPa: 800	+
Del.quantity cm3/: 51,354,3	+ Designation
1000H.: (49,855,8)	+ K mm : 3,23,4
5th speed 1/min: 1500	+ KF mm : 5,25,5 + MS mm : 0,70,9 + XK mm : 17,019,0
Charge press. hPa: 800	+ MS mm : 0,70,9
Del.quantity cm3/: 60,561,5	+ XK mm : 17,019,0
1000H.: (59,063,0)	+ XL mm : 8,612,0
6th speed 1/min: 700	1 ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Charge press. hPa: 800	Remarks:
Del.quantity cm3/: 52,053,0	The state of the s
1000H.: (50,055,0)	1
7th speed 1/min: 600	<u></u>
Charge press. hPa: 800	1
Del.quantity cm3/: 63,066,0	1
1000H.: (61,567,5)	1
8th speed 1/min: 600	
	I
Charge press. hPa: -	I
	TT CONTRACTOR OF THE CONTRACTO

Note inst. in remarks column

Test sheet : VMA 2,2 F1 : 15.11.89 Edition

replaces

: ISO 4113

Calibrating oil

: VE 4/10F2100 L269-1 Injection pump : 0 460 404 065 Type number

Customer-specific information : MOTORI VM Customer

: HR 492.4 HJ Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. _, C .

with thermometer: 40...48 : 42...50 electronically

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

bar: 147...150 pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery Prestroke mm : -(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1000 Speed Charge press. hPa: 1000 mm: 1,5...1,9 Setting value

Supply-pump pressure:

Speed 1/min: 1000 Charge press. hPa: 1000 Setting value bar: 4,4...5,0 Full-load del. with charge press.:

1/min: 1500 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 66,0...67,0

cm3/:3,0Dispersion 1000H : -

Full-load del. w/out charge press.:

1/min: 700 Speed

Del.quantity cm3/ 1000H.: 45,0...46,0

Low-idle speed regulation:

1/min: 450

Del.quantity cm3/ 1000H.: 13,0...17,0

Full-load speed regulation:

1/min: 2300 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H: 27,0...33,0

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 45,0 mind

Load-dependent start of delivery:

1/min: 1500 Speed Charge press. hPa: -

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 1000 1st speed hPa: 1000 Charge press.

mm: 1,5...1,9 TD travel mm: (1,0...2,4)

1/min: 1500 2nd speed hPa: 1000 Charge press. TD travel

mm: 4,1...4,9 mm: (3,8...5,2) 1/min: 2100

3rd speed Charge press. hPa: 1000 mm: 7,1...7,9 TD travel mm: (6,8...8,2)

Supply-pump pressure characteristic:

1st speed 1/min: Charge press. hPa: Supply-pump	1000	Zero delivery (stop):
pressure bar: 2nd speed 1/min:	3,23,8	Electr. shutoff:
Charge press. hPa:	4000	Speed 1/min: 450 ELAB volt: -
pressure bar: 3rd speed 1/min:	4,45,0	Del.quantity cm3/: 0,03,0 max. 1000H.: -
Charge press. hPa: Supply-pump pressure bar:	75 81	Idle delivery:
Overflow quantity at	t overflow valve:	1st speed 1/min: 450 Del.quantity cm3/: 13,017,0 1000H.: (10,020,0)
1st speed 1/min:	700	Zna speed 1/min: 4/5
Charge press. hPa: Oveflow :	1000 +	Del.quantity cm3/: 7,013,0 1000H.: (5,015,0)
quantity cm3/10s: 2nd speed 1/min: Charge press. hPa:	2100 +	3rd speed
Charge press. hPa: Overflow: quantity cm3/10s:	55138 (40153)	Automatic starting fuel delivery:
Delivery-quant. and	breakaway char.:	1st speed 1/min: 400
1st speed 1/min: Charge-air pressure	700 +	Del.quantity cm3/: - ind. 1000H: 50,0
point hPa: Del.quantity cm3/:	450 + 58,559,5 +	2nd speed 1/min: 550 Del.quantity cm3/: -
2nd speed 1/min:	(56,561,5) 2450	max. 1000H: 60,0
Charge press. hPa: Del.quantity cm3/:	1000 +	Shutoff electromagnet:
3rd speed 1/min:	2300	Cut-in min. voltage : 10,0
Charge press. hPa: Del.quantity cm3/:	27,033,0	Rated voltage : 12,0
4th speed 1/min:	(26,034,0) +	Mounting and assembly dimensions:
Charge press. hPa: Del.quantity cm3/: 1000H.:	57,558,5	Designation K mm : 3,23,4 KF mm : 5,66,0
5th speed 1/min: Charge press. hPa:	1500 +	MS mm : 5,66,0 MS mm : 0,61,0 XK mm : 20,022,0
Del.quantity cm3/:		XL mm : 10,013,4
6th speed 1/min: Charge press. hPa:	700 +	Remarks:
	(56,561,5)	
Charge press. hPa: Del.quantity cm3/:	1000 +	
8th speed 1/min:	(66,272,2)	
Charge press. hPa: Del.quantity cm3/: 1000H:	45,046,0 (43,048,0)	

Note inst. in remarks column

: VMA 2,2 M : 07.11.89 Test sheet Edition

replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/10F1600 L379 : 0 460 404 067

Type number

Customer-specific information

Customer : VM

: HR 494 HT Engine

k: 68 Power

TEST BENCH REQUIREMENTS

Calibrating-oil

return temp. , C . with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 000 assembly

Openina

bar: 147...150 pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery Prestroke mm : -(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1200 Speed Charge press. hPa: 1000 Setting value mm: 2,1...2,5

Supply-pump pressure:

1/min: 1200 Speed Charge press. hPa: 1000 Setting value bar: 4,8...5,4

Full-load del. with charge press.:

Speed 1/min: 1200 Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 61,0...62,0 Dispersion cm3/: 3,5

1000H : (4,0)

Full-load del. w/out charge press.:

1/min: 600

Del.quantity cm3/

1000H.: 52,0...53,0

Low-idle speed regulation:

1/min: 400 Speed Charge press. hPa: -

Del.quantity cm3/ 1000H.: 11,0...15,0 Dispersion cm3/: 3,5

1000H .: -

Full-load speed regulation:

Speed 1/min: 1700 Charge press. hPa: 1000 Del.quantity cm3/ 1000H: 32,0...38,0

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 60,0 mind

Load-dependent start of delivery:

Speed 1/min: 1200 Charge press. hPa: 1000

Inspection pump test specifications Test specifications in parentheses

Timing device characteristic:

1st speed 1/min: 1000 Charge press. hPa: 1000

mm: 1,0...1,8 mm: (0,7...2,1) 1/min: 1200 TD travel

2nd speed Charge press. hPa: 1000

mm: 2,1...2,5 mm: (1,6...3,0) TD travel

3rd speed 1/min: 1600

Charge press. hPa: 1000

TD travel mm: 3,94,7	+ Del.quantity cm3/: 61,062,0 + 1000H.: (55,561,5)
mm: (3,65,0)	+ 8th speed 1/min: 600
Supply-pump pressure characteristic:	+ Charge press. hPa: Del.quantity cm3/: 52,053,0 - 1000H: (49,555,5)
1st speed 1/min: 750 Charge press. hPa: 1000	1000H: (49,555,5)
Supply-pump	Zero delivery (stop):
pressure bar: 3,03,6 2nd speed 1/min: 1200	Mech. shutoff:
Charge press. hPa: 1000	† Speed 1/min: 1600
pressure bar: 4,85,4 3rd speed 1/min: 1600	Del.quantity cm3/: 03 1000H.: -
Charge press. hPa: 1000	+
Supply-pump pressure bar: 6,47,0	+ Electr. shutoff:
	Speed 1/min: 400
Overflow quantity at overflow valve:	+ ELAB volt: - + Del.quantity cm3/: 0,03,0 + max. 1000H.: -
1st speed 1/min: 750 Charge press. hPa: 1000	+ max. 1000H.: −
Oveflow : 4183	Idle delivery:
quantity cm3/10s: (2698) 2nd speed 1/min: 1600	1st speed 1/min: 400
Charge press. hPa: 1000 Overflow: 55138	Del.quantity cm3/: 11.015.0 1000H.: (8,518,5)
quantity cm3/10s: (40153)	2nd speed 1/min: 480
Delivery-quant. and breakaway char.:	1st speed 1/min: 400 Del.quantity cm3/: 11,015,0 1000H.: (8,518,5) 2nd speed 1/min: 480 Del.quantity cm3/: 2,08,0 1000H.: (1,09,0) 3rd speed 1/min: 550 Del.quantity cm3/: 0,03,0 1000H.: -
1st speed 1/min: 750	3rd speed 1/min: 550 Del.quantity cm3/: 0,03,0 1000H.: -
Charge-air pressure-setting point hPa: 200	± 1000H.: −
IDA stroke mm: -	+ Automatic starting fuel delivery:
Del.quantity cm3/: 58,059,0 1000H.: (55,561,5)	1st speed 1/min: 250
2nd speed 1/min: 1730 Charge press. hPa: 1000	- Del.quantity cm3/: - - ind. 1000H: 58,0
Deliquantity cm3/: 0,03,0	+
1000H.: - 3rd speed 1/min: 1700	2nd speed 1/min: 450 Del.quantity cm3/: -
Charge press. hPa: 1000 Del.quantity cm3/: 32,038,0	тах. 1000H: 66,0
1000H.: (29,041,0)	Shutoff electromagnet:
4th speed 1/min: 1600 Charge press. hPa: 1000	‡ Cuţ-in
Del.quantity cm3/: 53,556,5 1000H.: (52,058,0)	† min. voltage : 10,0 † Rated voltage : 12,0
5th speed 1/min: 1200 Charge press. hPa: 1000	+ Mounting and assembly dimensions:
Del.guantity cm3/: 61,062,0	
1000H.: (58,564,5) 6th speed 1/min: 750	+ Designation + K mm : 3,23,4
Charge press. hPa: 1000 Del.quantity cm3/: 60,063,0	+ KF mm : 5,66,0 + MS mm : 0,61,0
1000H.: (58,564,5)	+
7th speed 1/min: 750 Charge press. hPa: 200	Remarks:

Note inst. in remarks column

: ONA 3,4 A : 03.11.89 Test sheet Edition : 22.04.88 replaces Calibrating oil : ISO 4113

Injection pump : VE 6/10F1800 R209 : 0 460 406 048

Type number

Customer-specific information : ONAN Customer

Engine : L634T

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. "C

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening

bar: 147...150 pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Lenath

Start of delivery

Prestroke

te mm: 0,2 (from BDC): +0,02(0,04)

Injection pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1400 Speed Charge press. hPa: 800 Setting value mm: 3,9...4,3

Supply-pump pressure:

1/min: 1400 Speed Charge press. hPa: 800 Setting value bar: 4,8...5,4 Full-load del. with charge press.:

1/min: 1400 Charge press. hPa: 800

Del.quantity cm3/ 1000H.: 58,5...59,5 Dispersion cm3/: 3,0

1000H : (4,0)

Full-load del. w/out charge press.:

 $1/\min : 700$ Speed

Del.quantity cm3/ 1000H.: 44,0...45,0

Low-idle speed regulation:

1/min: 400 Speed

Del.quantity cm3/

1000H.: 14,0...18,0 cm3/: 3,0

Dispersion 1000H.: -

Full-load speed regulation:

1/min: 1900 Speed Charge press. hPa: 800

Del.quantity cm3/

1000H: 37,0...43,0

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 42,0 mind

Load-dependent start of delivery:

1/min: 1400 Speed Charge press. hPa: 800

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 800 1st speed hPa: 800 Charge press.

TD travel mm: 1,0...1,8 mm: (0,7...2,1)

2nd speed 1/min: 1400 hPa: 800 Charge press.

mm: 3,9...4,3 mm: (3,4...4,8) TD travel

1/min: 1800 3rd speed Charge press. hPa: 800

mm: 5,4...6,2 mm: (5,1...6,5) TD travel

Supply-pump pressure characteristic:	‡	Del.quantity cm3/: 58,061,0 1000H: -
1st speed 1/min: 800	1	9th speed 1/min: 700
Change appear hose 900		Change appear has 300
Charge press. hPa: 800	T	Charge press. hPa: 300
Supply-pump	+	Del.quantity cm3/: 50,551,5
pressure bar: 2,73,3	+	1000H: (48,753,3)
2nd speed 1/min: 1400	+	10th speed 1/min: 700
Charge press. hPa; 800	+	Charge press. hPa: -
Supply-pump	1	Del.quantity cm3/: 44,045,0
management have 4.9 5.4	- F	1000H: (42,246,8)
pressure bar: 4,85,4 3rd speed 1/min: 1800	T	1000n: (42,240,0)
3rd speed 1/min: 1800	+	
Supply-pump	+	Zero delivery (stop):
pressure bar: 6,06,6	+	
, , , , , , , , , , , , , , , , , , ,	1	Mech. shutoff:
Overflow quantity at overflow valve:	1	
over flow quartity at over flow valve.	T	Canad 1/min. 1900
4 1 4 4 1 700	T	Speed 1/min: 1800
1st speed 1/min: 700	+	Del.quantity_cm3/: 03
Charge press. hPa: 800	+	1000H.: -
Oveflow : 4183	+	
quantity cm3/10s: (2698)	1	Electr. shutoff:
2nd speed 1/min: 1800	1	
Change appear has 970	T	Speed 1/min 750
Charge press. hPa: 800	†	Speed 1/min: 350
Overflow : 55138	+	ELAB volt: -
quantity cm3/10s: (40153)	+	Del.quantity cm3/: 0,03,0
	+	max. 1000H.: -
Delivery-quant. and breakaway char.:	1	
betively qualit. and bi canamay enails.	i	Idle delivery:
Astronomical Almino 700	T	Tate decivery.
1st speed 1/min: 700	†	4 . 1 4/ . /00
Charge-air pressure-setting	+	1st speed 1/min: 400
point hPa: 300	+	Del.quantity cm3/: 14,018,0
LDA stroke mm: 5,1	+	Del.quantity cm3/: 14.018.0 1000H.: (12,020,0)
Del.quantity cm3/: 44,045,0	1	2nd speed 1/min: 450
1000u - (/2 2 /4 9)	1	Dol quantity cm3/: 0.0 6.0
1000H.: (42,246,8)	T	Del.quantity cm3/: 0,06,0
2nd speed 1/min: 2050	+	1000H.: -
Charge press. hPa: 800	+	3rd speed 1/min: 350
Del.quantity cm3/: 0,03,0	+	Del.quantity cm3/: 26,533,5
1000H.: -	+	1000H.: (26,034,0)
3rd speed 1/min: 2000	1	
Charge press. hPa: 800	1	Automatic starting fuel delivery:
Dal mantitus and 1. 5 5 4/ 5	T	Additionable state ing fact decivery.
Del.quantity_cm3/: 5,514,5	Ť	4 - b 1
1000н.: -	+	1st speed 1/min: 220
4th speed 1/min: 1950	+	Del.quantity cm3/: -
Charge press. hPa: 800	+	ind. 1000H: 42,0
Del.quantity cm3/: 23,031,0	+	•
1000H.: (22,032,0)	1	2nd speed 1/min: 300
	T	
5th speed 1/min: 1900	T	Del.quantity cm3/: -
Charge press. hPa: 800		***** ADDOU : 12 D
Del.quantity cm3/: 37,043,0	+	max. 1000H: 42,0
	‡	•
1000H.: (36,044,0)	†	•
1000H.: (36,044,0) 6th speed 1/min: 1800	+	max. 1000H: 42,0 Shutoff electromagnet:
6th speed 1/min: 1800	† † †	Shutoff electromagnet:
6th speed 1/min: 1800 Charge press. hPa: 800	+++++++++++++++++++++++++++++++++++++++	Shutoff electromagnet: Cut-in
6th speed 1/min: 1800 Charge press. hPa: 800 Del.quantity cm3/: 51,554,5	++++++	Shutoff electromagnet: Cut-in min. voltage : 10,0
6th speed 1/min: 1800 Charge press. hPa: 800 Del.quantity cm3/: 51,554,5 1000H.: (50,755,3)	+ + + + + + + + + + + + + + + + + + +	Shutoff electromagnet: Cut-in
6th speed 1/min: 1800 Charge press. hPa: 800 Del.quantity cm3/: 51,554,5 1000H.: (50,755,3) 7th speed 1/min: 1400	+ + + + + + + + + + + + + + + + + + +	Shutoff electromagnet: Cut-in min. voltage : 10,0
6th speed 1/min: 1800 Charge press. hPa: 800 Del.quantity cm3/: 51,554,5 1000H.: (50,755,3) 7th speed 1/min: 1400	* + + + + + + + + + + + + + + + + + + +	Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0
6th speed 1/min: 1800 Charge press. hPa: 800 Del.quantity cm3/: 51,554,5 1000H.: (50,755,3) 7th speed 1/min: 1400 Charge press. hPa: 800	+ + + + + + + + + + + + + + + + + + + 	Shutoff electromagnet: Cut-in min. voltage : 10,0
6th speed 1/min: 1800 Charge press. hPa: 800 Del.quantity cm3/: 51,554,5 1000H.: (50,755,3) 7th speed 1/min: 1400 Charge press. hPa: 800 Del.quantity cm3/: 58,559,5	+++++++++++++++++++++++++++++++++++++	Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions:
6th speed 1/min: 1800 Charge press. hPa: 800 Del.quantity cm3/: 51,554,5 1000H.: (50,755,3) 7th speed 1/min: 1400 Charge press. hPa: 800 Del.quantity cm3/: 58,559,5 1000H.: (56,761,3)	+++++++++++++++++++++++++++++++++++++++	Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation
6th speed 1/min: 1800 Charge press. hPa: 800 Del.quantity cm3/: 51,554,5	+++++++++++++++++++++++++++++++++++++++	Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation K mm : -
6th speed 1/min: 1800 Charge press. hPa: 800 Del.quantity cm3/: 51,554,5 1000H.: (50,755,3) 7th speed 1/min: 1400 Charge press. hPa: 800 Del.quantity cm3/: 58,559,5 1000H.: (56,761,3)	 	Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation

SVS max. XK XL

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

Note inst. in remarks column

: ONA 3,4C : 03.11.89 Test sheet Edition replaces : 13.07.88 Calibrating oil : ISO 4113

: VE 6/10F 1500R 209-2 Injection pump

: 0 460 406 060 Type number

Customer Part-No. :

Customer-specific information

Customer : ONAN

: L634TA HD Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. ... C .

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 000

Openina

pressure bar: 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke mm : 0.2

(from BDC): +-0.02(0.04)

Indicator setting: Piston stroke mm: 1.0 Outlet : A

Injection pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1400 Speed Charge press. hPa: 800

Setting value mm: 4,3...4,7

Supply-pump pressure:

1/min: 1400 Charge press. hPa: 800 Setting value bar: 4,8...5,4

Full-load del. with charge press.:

1/min: 1100 Speed Charge press. hPa: 800

Del.quantity cm3/ 1000H: 55,5...56,5 Dispersion cm3/: 3,0 1000H: (3,0)

Full-load del. w/out charge press.:

1/min : 700 Speed

Del.quantity cm3/ 1000H.: 42,5...43,5

Low-idle speed regulation:

1/min: 400 Speed

cm3/: 3.0Dispersion

1000H.: (3,0)

Full-load speed regulation:

1/min: 1640 Speed Charge press. hPa: 800

Del.quantity cm3/

1000H: 20,0...24,0

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 42,0

Load-dependent start of delivery:

1/min: 1100 Speed Charge press. hPa: 800

Inspection pump test specifications Test specifications in parentheses

Timing device characteristic:

1st speed 1/min: 800 Charge press. hPa: 800

TD travel mm: 1,4...2,2 mm: (1,1...2,5) 2nd speed 1/min: 1100

Charge press. hPa: 800

TD travel mm: 2,7	.3.3 +	Del.quantity cm3/: 55,5.	56,5
mm: (2,3.	3,7)	1000н.: (53,7	58,3)
3rd speed 1/min: 1400	· +	7th speed 1/min: 700	•
Charge press. hPa: 800	, <u> </u>	Charge press. hPa: 800	FO F
TD travel mm: 4,3	·4 ₆ (2)	Deliquantity cm3/: 55,5.	38,5
mm: (3,8.	·· ³ / ² /	1000H.: - 8th speed 1/min: 700	
Supply-pump pressure char	acteristic:	Charge press. hPa: 350	
coppey perip product a criar	+	Deliquantity cm3/: 48,0	49,0
1st speed 1/min: 700	+	1000H: (46,2)	50,8)
Charge press. hPa: 800	†	9th speed 1/min: 700	
Supply-pump	20 1	Charge press. hPa: - Del.quantity cm3/: 42,5	1.7 5
pressure bar: 2,3 2nd speed 1/min: 1100	· · · · · · · I	1000H: (40,7)	45.3)
Charge press. hPa: 800	1	1999/11 (1971)	
Supply-bump	+	Zero delivery (stop):	
pressure bar: 3.8 3rd speed 1/min: 1400	.4,4		
3rd speed 1/min: 1400	+	Mech. shutoff:	
Charge press. hPa: 800	1	Speed 1/min: 1500	
Supply-pump pressure bar: 4,8	5.4 I	Del.quantity cm3/: 03	
pressure bar. 470		1000H.: -	
Overflow quantity at over	flow valve: $+$, 222,,, 1	
	+	Electr. shutoff:	
1st speed 1/min: 700	+	0 - 1 - 4/min 250	
Charge press. hPa: 800	oz †	Speed 1/min: 350 ELAB volt: -	
Oveflow : 41 quantity cm3/10s: (26	I		3,0
2nd speed 1/min: 1500	.,0,	max. 1000H.: -	370
Charge press. hPa: 800	+	, 200, 100	
Overflow: 55	138	Idle delivery:	
quantity cm3/10s: (40	.153) +	4	
Del & come mant and brook	t chart	1st speed 1/min: 400	19 N
Delivery-quant. and break	away char.:	Del.quantity cm3/: 14,0 1000H.: (12,0.	. 10,0
1st speed 1/min: 700	+	2nd speed 1/min: 450	
Charge air pressure setti	ng 🕂	Del.quantity cm3/: 0,0	.6,0
point hPa: 350	+	3rd speed 1/min: 350	
LDA stroke mm: 6,5	10.5	Del.quantity cm3/: 0.0 3rd speed 1/min: 350 Del.quantity cm3/: 26,5	.33,5
Del.quantity cm3/: 48,0. 1000H.: (46,2	48,5	1000H.: -	
2nd speed 1/min: 1740	_{50,60} I	Automatic starting fuel de	alivery.
Charge press. hPa: 800	1	nationate starting race at	er ver y .
	.6,0 +	1st speed 1/min: 220	
Del.quantity cm3/: 0,0 1000H.: -	+	Del.quantity cm3/: -	
3rd speed 1/min: 1640	†	ind. 1000H: 42,0	
Charge press. hPa: 800 Del.quantity cm3/: 20,0.	24.0	2nd speed 1/min: 300	
1000H.: (18,0		Del.quantity cm3/: -	
4th speed 1/min: 1580	+	max. 1000H: 42,0	
Charge press. hPa: 800	+		
Del.quantity cm3/: 43,0.	51,0 +	Shutoff electromagnet:	
1000H.: -	+	0.45	
5th speed 1/min: 1500	Ť	Cut-in min. voltage : 10,0	
Charge press. hPa: 800 Del.quantity cm3/: 52,5.	55.5 I	min. voltage : 10,0 Rated voltage : 12,0	
1000H.: (51,7	56,3)	· · · · · · · · · · · · · · · ·	
6th speed 1/min: 1400	+	Mounting and assembly dime	ensions:
Charge press. hPa: 800	+	-	
	+	Designation	

K mm : KF mm : 5,6...6,0
MS mm : 0,6...1,0
SVS max. mm : 2,1

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

Note inst. in remarks column

: VOL 3,1 A1 : 03.11.89 Test sheet Edition : 04.12.86 replaces : ISO 4113 Calibrating oil

Injection pump : VE 4/11F1625 L217-2

: 0 460 414 031 Type number

Customer-specific information : VOLVO PENEA Customer

: TAM 31 Engine

k: 81 Power

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. "C

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening

bar: 130...133 pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 mm: 450 x Length

Start of delivery

mm : 0,3Prestroke

(from BDC): +0.02(0.04)

Injection pump setting values Test specifications in parentheses

Timing device travel:

1/min: 1500 Speed Charge press. hPa: 1000 mm: 4,3...4,7 Setting value

Supply-pump pressure:

1/min: 1500 Speed Charge press. hPa: 1000 Setting value bar: 6,1...6,7

Full-load del. with charge press.:

Speed 1/min: 1500 Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 83,5...84,5

cm3/:5,0Dispersion 1000H : -

Full-load del. w/out charge press.:

 $1/\min : 650$

Del.quantity cm3/

1000H.: 51,0...52,0

Low-idle speed regulation:

Speed 1/min: 350

Del.quantity cm3/

1000H.: 23,0...27,0

cm3/: 3,5 Dispersion 1000H.: -

Full-load speed regulation:

1/min: 1800 Speed Charge press. hPa: 1000

Del.quantity cm3/

1000H: 31,0...37,0

Start:

Speed 1/min: 100 Del.quantity cm3/1000H.: 95,0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1100

hPa: 1000 Charge press. mm: 0,9...1,7 mm: (0,6...2,0) TD travel

1/min: 1500 2nd speed

Charge press. hPa: 1000 mm: 4,3...4,7 mm: (3,8...5,2) 1/min: 1625 TD travel

3rd speed

Charge press. hPa: 1000 TD travel mm: 5,0...5,8mm: (4,7...6,1)

Supply-pump pressure characteristic:

1st speed 1/min: 800

Charge press. hPa: 1000 Supply-pump pressure bar: 3,44,0 2nd speed 1/min: 1500 Charge press. hPa: 1000 Supply-pump pressure bar: 6,16,7 3rd speed 1/min: 1625 Charge press. hPa: 1000 Supply-pump pressure bar: 6,67,2 Overflow quantity at overflow valve:	Charge press. hPa: 1000 Del.quantity cm3/: 90,093,0
1st speed 1/min: 800 Charge press. hPa: 1000 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1625 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153)	Electr. shutoff: Speed 1/min: 350 ELAB volt: 12,0 Del.quantity cm3/: 0,03,0 max. 1000H.: -
Delivery-quant. and breakaway char: 1st speed 1/min: 800 Charge-air pressure-setting point hPa: 300 LDA stroke mm: 6,4 Del.quantity cm3/: 65,066,0 1000H.: (63,267,8) 2nd speed 1/min: 1970 Charge press. hPa: 1000 Del.quantity cm3/: 0,03,0 1000H.: - 3rd speed 1/min: 1880 Charge press. hPa: 1000 Del.quantity cm3/: 3,011,0 1000H.: (2,012,0) 4th speed 1/min: 1750	1st speed 1/min: 350 Del.quantity cm3/: 23,027,0
Charge press. hPa: 1000 Del.quantity cm3/: 53,061,0 1000H.: - 5th speed 1/min: 1800 Charge press. hPa: 1000 Del.quantity cm3/: 31,037,0 1000H.: (30,038,0) 6th speed 1/min: 1625 Charge press. hPa: 1000 Del.quantity cm3/: 78,581,5 1000H.: (77,083,0) 7th speed 1/min: 1500 Charge press. hPa: 1000 Del.quantity cm3/: 83,584,5 1000H.: (81,786,3) 8th speed 1/min: 1000 Charge press. hPa: 1000 Del.quantity cm3/: 91,794,3 1000H: (90,795,3) 9th speed 1/min: 800	Mounting and assembly dimensions: Designation K

Note inst. in remarks column

: VOL 3,1 A2 : 03.11.89 Test sheet Edition replaces : 04.12.86 : ISO 4113 Calibrating oil

Injection pump : VE 4/11F1625 L217-4

: 0 460 414 034 Type number

Customer-specific information : VOLVO PENTA Customer

: TAM 31 Engine

k: 81 Power

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. , C

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

pressure bar: 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 mm: 450 x Lenath

Start of delivery

mm : 0,3 Prestroke

(from BDC): +0.02(0.04)

Injection pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1500 Speed Charge press. hPa: 1000 Setting value mm: 4,3...4,7

Supply-pump pressure:

1/min: 1500 Speed Charge press. hPa: 1000 Setting value bar: 6,1...6,7

Full-load del. with charge press.:

1/min: 1500 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 83,5...84,5

cm3/:5,0Dispersion

1000H: -

Full-load del. w/out charge press.:

 $1/\min : 650$

Del.quantity cm3/

1000H.: 51,0...52,0

Low-idle speed regulation:

1/min: 350 Speed

Del.quantity cm3/

1000H.: 23,0...27,0

cm3/: 3,5 Dispersion 1000H.: -

Full-load speed regulation:

Speed 1/min: 1800 Charge press. hPa: 1000

Del.quantity cm3/

1000H: 31,0...37,0

Start:

Speed 1/min: 100 Del.quantity cm3/1000H.: 95,0 mind

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 1100 1st speed Charge press. hPa: 1000

TD travel mm: 0,9...1,7mm: (0,6...2,0)

2nd speed 1/min: 1500 Charge press. hPa: 1000

mm: 4,3...4,7 mm: (3,8...5,2) TD travel

3rd speed 1/min: 1625 Charge press. hPa: 1000

mm: 5,0...5,8 TD travel

mm: (4,7...6,1)

Supply-pump pressure characteristic:

1st speed 1/min: 800

Charge press. hPa: 1000	Charge press. hPa: 1000
	Del.quantity cm3/: 90,093,0
Supply-pump	400011 (80 E 0/ E)
pressure bar: 3,44,0	1000H: (88,594,5)
2nd speed 1/min: 1500	+ 10th speed 1/min: 800
Charge press. hPa: 1000	Charge press. hPa: 300
Cimplianium	Del quantity cm3/: 65 0 66 0
Supply-pump	Del.quantity cm3/: 65,066,0 1000H: (63,267,8)
pressure bar: 6,16,7 3rd speed 1/min: 1625	† 1000H: (63,267,8)
3rd speed 1/min: 1625	11th speed 1/min: 650
Charge press. hPa: 1000	Charge press. hPa: -
	Del.quantity cm3/: 51,052,0
Supply-pump -	1 Dec. quarterly (1107. 51,052,0
pressure bar: 6,67,2	† 1000H: (49,253,8)
•].
Overflow quantity at overflow valve:	- Zero delivery (stop):
over real quarters at over real vacver	Zero decivery totopy.
4	T
1st speed 1/min: 800	†
Charge press. hPa: 1000	+ Electr. shutoff:
Oveflow : 4183	1
guantitis (m7/40c) (24 09)	Speed 1/min: 350
quantity cm3/10s: (2698)	
2nd speed 1/min: 1625	† ELAB volt: 24,0
Charge press. hPa: 1000	Del.quantity_cm3/: 0,03,0
Overflow : 55138	max. 1000H.: -
	T 1110X. 100011
quantity cm3/10s: (40153)	†
•	🕂 Idle delivery:
Delivery-quant. and breakaway char.:	+
oblivery quarter area or our anyay or are	1st speed 1/min: 350
A 1 1 A L. t	131 Speed 1/11/11. 330
1st speed 1/min: 800	+ Det.quantity cms/: 25,027,0
Charge-air pressure-setting	Del.quantity cm3/: 23,027,0 1000H.: (20,030,0)
point hPa: 300	2nd speed 1/min: 400
LDA stroke mm: 6,4	Del.quantity cm3/: 7,013,0_
	4000u - (F.E. 4) E)
Del.quantity cm3/: 65,066,0 1000H.: (63,267,8)	1000H.: (5,514,5)
1000H.: (63,267,8)	3rd speed 1/min: 460
2nd speed 1/min: 1970	Del.quantity cm3/: 0,03,0
Change pages 17000	1000H.: -
Charge press. hPa: 1000	10001
Del.quantity cm3/: 0,03,0	†
1000H.: -	<pre>f Shutoff electromagnet:</pre>
3rd speed 1/min: 1880	1
	Contain
Charge press. hPa: 1000	- Cut-in
Del.quantity cm3/: 3,011,0	† min. voltage : 20,0
1000H.: (2,012,0) -	Rated voltage : 24,0
4th speed 1/min: 1750	
	Mounting and agraphly dimangians
Charge press. hPa: 1000	Mounting and assembly dimensions:
Del.quantity cm3/: 53,061,0 -	
1000H.: -	+ Designation
5th speed 1/min: 1800	K mm :-
	1
Charge press. hPa: 1000	
Del.quantity cm3/: 31,037,0	- MS mm : 1,21,45
1000H.: (30 ₂ 038 ₇ 0)	SVS max. mm : 1,2 XK mm : 18,820,8
6th speed 1/min: 1625 -	XK mm : 18,820,8
6th speed 1/min: 1625 -	1 VI mm - 44 4 4 / E
Charge press. hPa: 1000	+ XL mm : 11,114,5
Del.quantity cm3/: 78,581,5 -	†
1000H.: (77,083,0)	Remarks:
7th speed 1/min: 1500	
Chamba anno a labora 4000	Openate control lavar after and
Charge press. hPa: 1000	Operate control lever after each
Del.quantity cm3/: 83,584,5	manifold-pressure compensator pressure
1000H.: (81,786,3)	change.
	1
	the Company of addition and (1/2)
Charge press. hPa: 1000	+ * Correction at adjusting nut (46)
Del.quantity cm3/: 91,794,3 -	 -
1000H: (90,795,3) -	i
14714774 \ 7444 74437	*
9th speed 1/min: 800	Pushing electromagnet.

Note inst. in remarks column

: SOF 2,5K2 Test sheet : 02.11.89 Edition

replaces

Calibrating oil : ISO 4113

: VE 4/11F1900 R127-2 Injection pump

: 0 460 414 038 Type number

Customer-specific information : IVECO SOFIM

: 8140.21.215 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil

return temp. ., C . with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 023

Opening

bar: 172...175 pressure

Perforated-plate

mm : 0.4diameter

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 mm: 450 x Length

Start of delivery

mm : 0.3Prestroke

(from BDC): +0.02(0.04)

Injection pump setting values Test specifications in parentheses

Timing device travel:

1/min: 1100 Speed Charge press. hPa: 1000 Setting value mm: 4,6...5,0

Supply-pump pressure:

1/min: 1100 Speed

Charge press. hPa: 1000 Setting value bar: 5,1...5,7

Full-load del. with charge press.:

1/min: 1100 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H: 44,7...45,7 Dispersion cm3/: 3,5 1000H: -

Full-load del. w/out charge press.:

 $1/\min : 500$ Speed

Del.quantity cm3/

1000H.: 38,5...39,5

Low-idle speed regulation:

Speed 1/min: 400 Charge press. hPa: -Del.quantity cm3/ 1000H.: 13,0...17,0

Full-load speed regulation:

Speed 1/min: 2300 Charge press. hPa: 1000

Del.quantity cm3/

1000H: 15,0...21,0

Start:

1/min: 100 Speed Charge press. hPa: -Del.quantity cm3/1000H.: 60,0 mind

Load-dependent start of delivery:

1/min: 1100 Charge press. hPa: -

Inspection pump test specifications Test specifications in parentheses

Timing device characteristic:

1/min: 800 1st speed Charge press. hPa: 1000

mm: 2,8...3,6 mm: (2,5...3,9) TD travel

2nd speed 1/min: 1100 Charge press. hPa: 1000

mm: 4,6...5,0 mm: (4,1...5,5) 1/min: 1500 TD travel

3rd speed Charge press. hPa: 1000

F20

TD travel mm: 6,16,9	1	Del.quantity cm3/: 42,344,7
mm: (5,87,2)	Ĺ	1000H.: (40,946,1)
1911. (2/0//2)	Т	746 as a sel 4/min 4400
4th speed 1/min: 1900	+	7th speed 1/min: 1100
Charge press. hPa: 1000	+	Charge press. hPa: 1000
TD travel mm: 7,68,4	1	Del.quantity cm3/: 44,745,7
77 7 9 7)	ł	1000 · (/2 6 /7 8)
mm: (7,38,7)	T	1000H.: (42,647,8)
	+	8th speed 1/min: 900
Supply-pump pressure characteristic:	+	Charge press. hPa: 400
completely formula for commercial and an exercise	L	hal quantity cm3/. 37 5 38 5
Ant annual Almin FAA	7	Del.quantity cm3/: 37,538,5 1000H: (35,440,6)
1st speed 1/min: 500	+	10001: (35,440,6)
Charge press. hPa: 1000	+	9th speed 1/min: 500
Supply-pump	+	Charge press. hPa: 1000
pressure bar: 3,33,9	1	Del.quantity cm3/: 50,854,2
2nd annual 1/mins 1100	1	
2nd speed 1/min: 1100	+	1000H: (49,155,9)
Charge press. hPa: 1000	+	10th speed 1/min: 500
Sianni v-nimn	+	Charge press. hPa: -
pressure bar: 5,15,7 3rd speed 1/min: 1900	1	Del.quantity cm3/: 38,539,5
7-d annual 1/-in. 1000	1	40001. (74 / 14 4)
sia speea (ilimin: 1800)	+	1000H: (36,441,6)
Charge press. hPa: 1000	+	
Supply-pump	+	Zero delivery (stop):
pressure bar: 7,27,8	1	zoro doctroly toosper
pressure bar. 1/21/0	T	
	+	
Overflow quantity at overflow valve:	+	Idle delivery:
	1	•
1st speed 1/min: 500	1	1st speed 1/min: 400
	T	15t Speed 1/11111. 400
Charge press. hPa: -	+	Del.quantity cm3/: 13,017,0_
Oveflow : 4183	+	Del.quantity cm3/: 13,017,0 1000H.: 10,519,5
quantity cm3/10s: (2698)	1	2nd speed 1/min: 350
	1	Dol graphita (p. 77 / 27 / 27 / 27 / 27 / 27 / 27 / 27
2nd speed 1/min: 1900	†	Deciduantity cms/: 27,035,0
Charge press. hPa: 1000	+	Del.quantity cm3/: 27,033,0 1000H.: (25,534,5)
Overflow : 55138	+	3rd speed 1/min: 550
quantity cm3/10s: (40153)	1	Del.quantity cm3/: 0,05,0
qualitity (1157-165. (401557	T	ADDOU -
	+	1000H.: -
Delivery-quant. and breakaway char.:	+	
•	+	Automatic starting fuel delivery:
1st speed 1/min: 900	1	, accumate contents , accuments
		1st smood 1/min. 200
Charge-air pressure-setting	+	1st speed 1/min: 200
point hPa: 400	+	Charge press. hPa: -
LDA stroke mm: 6,2	+	Del.quantity cm3/: -
Del.quantity cm3/: 37,538,5	1	ind. 1000H: 70,0
4000H - 77E / /0 /\	Ŧ	1110.
1000H.: (35,440,6)	+	
2nd speed 1/min: 2450	+	2nd speed 1/min: 350
Charge press. hPa: 1000	+	Charge press. hPa: -
Del.quantity cm3/: 0,05,0	1	Del.quantity cm3/: -
decidiation (IID). Old)	T	
1000н.: -	+	max. 1000H : 70,0
3rd speed 1/min: 2300	+	
Charge press. hPa: 1000	+	Shutoff electromagnet:
Del.quantity cm3/: 15,021,0	1	oriator: acoust smagnous
10000 (47 E 22 E)	T	A L B
1000H.: (13,522,5)	+	Cut-in (1997)
4th speed 1/min: 2100	+	min. voltage : 10,0
Charge press. hPa: 1000	+	Rated voltage : 12,0
hal quantity on 7/2 70 0 20 0	Ĺ	114104 1010450 . IE/O
Del.quantity_cm3/: 30,038,0	T	88
1000H.: (29,538,5)	+	Mounting and assembly dimensions:
5th speed 1/min: 1900	+	
Charge press. hPa: 1000	1	Designation
	1	
Del.quantity_cm3/: 41,644,0	7	K mm : -
1000H.: (40,245,4)	+	KF mm : K-OT
6th speed 1/min: 1500	+	MS mm : 0,81,2
Charge press. hPa: 1000	1	SVS max. mm : 1,5
charge press. Him. 1000		OVO BIOA - INII - 1/2





Note inst. in remarks column

: FOR 2,5 B : 07.11.89 Test sheet Edition : 12.05.89 replaces Calibrating oil : ISO 4113

: VE 4/11F2000 R288 Injection pump : 0 460 414 051 Type number

Customer-specific information : FORD Customer

: 2,5 DI Engine

TEST BENCH REQUIREMENTS

Calibrating-oil

return temp. , C . with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 023

Opening

bar: 172...175 pressure

Perforated plate

mm : 0.4diameter

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 mm: 450 x Length

Start of delivery Prestroke mm : -(from BDC): -

Start of delivery block Piston stroke mm: 0,78 mm: 0,73...0,83

Outlet : B

Injection pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250 Setting value mm: 2,5...2,9

Supply-pump pressure:

1/min: 1250 Speed Setting value bar: 5,6...6,2

Full-load del. w/out charge press.:

1/min : 500 Speed

Del.quantity cm3/

1000H.: 30,5...31,5 F

Low-idle speed regulation:

1/min: 425 Speed

Del.quantity cm3/ 1000H.: 16,0...20,0

Full-load speed regulation:

Speed 1/min: 2100

Del.quantity cm3/

1000H: 30,5...34,5

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 62,0 mind '

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 800 1st speed

mm: 0,0...0,8 mm: (0,0...1,1) TD travel

1/min: 1250 2nd speed

mm: 2,5...2,9 mm: (2,2...3,2) 1/min: 1950 TD travel

3rd speed

mm: 6,0...6,8 mm: (5,7...7,1) TD travel

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 3,1...3,7 1/min: 1000 pressure 2nd speed

Supply-pump

bar: 4,8...5,4 pressure 1/min: 1250

3rd speed Supply-pump

bar: 5,6...6,2 1/min: 1950 pressure 4th speed

Supply-pump

bar: 7,7...8,3 pressure

Overflow quantity at overflow valve:

1st speed 1/min: 500 : 55...100 Oveflow cm3/10s: (40...115) quantity 1/min: 1950 2nd speed

83...153 Overflow quantity cm3/10s: (68...168)

Delivery quant. and breakaway char .:

1/min: 1950 1st speed mm: 10.0 HBA stroke

Del.quantity cm3/: 37,0...40,6 D 1000H.: (36,3...41,3) D

1/min: 2400 2nd speed

Del.quantity cmp/. 1000H.: cm3/: 0,0...10,0

3rd speed

1/min: 2200 cm3/: 18,0...26,0 Del.quantity cm3/: 10,0...28,0)

4th speed 1/min: 2100

Del.quantity cm3/: 30,3...37,5)

5th speed

1/min: 1950 cm3/: 37,0...40,6 1000H.: (36,3...41,3) Del.quantity

1/min: 1700 6th speed

Del.quantity cm3/: 37,7...41,3 1000H.: (37,0...42,0)

1/min: 1000 7th speed

Del.quantity cm3/: 35,5...38,5) E

8th speed 1/min: 500 Del.quantity cm3/: 30,5...31,5 F 1000H: (26,0...36,0) F

Zero delivery (stop):

Electr. shutoff:

1/min: 425 Speed ELAB volt: -

cm3/: 0,0...3,0 Del.quantity

1000H.: max.

Idle delivery:

1st speed 1/min: 425

cm3/: 16,0..20,0 Del.quantity

1000H.: (14,0..22,0)

2nd speed 1/min: 500 Del.quantity cm3/: 9,5...17,5 1000H.: (7,5...19,5)

Automatic starting fuel delivery:

1st speed 1/min: 300 Del.quantity cm3/: -1000H: 30,0 ind.

1/min: 480 2nd speed Del.quantity cm3/: -max. 1000H : 34,0

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

3,2...3,4 mm KF : K-OT : 1,3...1,7 mm MS mm : 3,8 : 17,0...19,0 SVS max. mm XK mm XL : 10,9...14,5 mm

Remarks:

Pump/engine assignment: Stroke in blocking position 0.73...
0.83 mm, referenced to outlet "B".
Attach timing device cover KDEP 1151.

F = Adjustment point for low full-load delivery

E = Fuel-delivery adjustment point in HBA range. (Correction by way of HBA adjusting screw).

D = Adjustment point for high full-

load delivery

Note inst. in remarks column

Test sheet : FOR 2,5 C : 07.11.89 Edition : 12.05.89 replaces : ISO 4113 Calibrating oil

: VE 4/11F2000 R288-1 Injection pump

: 0 460 414 052 Type number

Customer-specific information

Customer : FORD

Engine : 2,5 DI

TEST BENCH REQUIREMENTS

Calibrating oil

return temp. .. C . with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 023 assembly

Opening

bar: 172...175 pressure

Perforated-plate

diameter mm : 0.4

Test inj. tubing : 1 680 750 073

Outside diameter x Wall thickness : 2 mm: 450 x Length

Start of delivery Prestroke mm : -(from BDC): -

Start of delivery block mm: 0.78Piston stroke

mm: 0,73...0,83

Outlet : B

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1250 Setting value mm: 2,5...2,9 Supply-pump pressure:

1/min: 1250 Speed Setting value bar: 5,6...6,2

Full-load del. w/out charge press.:

 $1/\min : 500$ Speed

Del.quantity cm3/ 1000H.: 30,5...31,5 F

Low-idle speed regulation:

Speed 1/min: 425

Del.quantity cm3/ 1000H.: 16,0...20,0

Full-load speed regulation:

Speed 1/min: 2100

Del.quantity cm3/

1000H: 30,5...34,5

Start:

Speed 1/min: 100 Del.quantity cm3/1000H.: 62,0 mind

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800

mm: 0,0...0,8 mm: (0,0...1,1) TD travel

1/min: 1250 2nd speed

mm: 2,5...2,9 mm: (2,2...3,2) 1/min: 1950 TD travel

3rd speed

mm: 6,0...6,8 mm: (5,7...7,1) TD travel

Supply-pump pressure characteristic:

1st speed 1/min: 500

Supply-pump

bar: 3,1...3,7 1/min: 1000 pressure

2nd speed

Supply-pump

pressure bar: 4,8...5,4

3rd speed 1/min: 1250

Supply-pump

bar: 5,6...6,2 1/min: 1950 pressure 4th speed

Supply-pump

bar: 7,7...8,3 pressure

Overflow quantity at overflow valve:

1/min: 500 1st speed Oveflow : 55...100 quantity cm3/10s: (40...115)

2nd speed 1/min: 1950 Overflow : 83...153 quantity cm3/10s: (68...168)

Delivery-quant. and breakaway char.:

1/min: 1950 1st speed

HBA stroke mm: 10,0
Del.quantity cm3/: 37,0...40,6 D
1000H.: (36,3...41,3) D
2nd speed 1/min: 2400

Del.quantity cmp/. cm3/: 0,0...10,0

3rd speed 1/min: 2200
Del.quantity cm3/: 18,0...26,0
1000H.: (16,0...28,0)
4th speed 1/min: 2100
Del.quantity cm3/: 30,5...34,5
1000H.: (27,5...37,5)
5th speed 1/min: 1950
Del.quantity cm3/: 37,5

Del.quantity cm3/: 37,0...40,6 1000H.: (36,3...41,3) 6th speed 1/min: 1700 Del.quantity cm3/: 37,7...41,3 1000H.: (37,0...42,0)

1/min: 1000 7th speed

Del.quantity cm3/: 35,5...36,5 E 1000H.: (33,5...38,5) E

8th speed 1/min: 500

Del.quantity cm3/: 30,5...31,5 F 1000H: (26,0...36,0) F

Zero delivery (stop):

Electr. shutoff:

1/min: 425 Speed ELAB volt: -

Del.quantity cm3/: 0,0...3,0 max. 1000H.: -

Idle delivery:

1/min: 425 1st speed

Del.quantity cm3/: 16,0..20,0 1000H.: (14,0..22,0) 2nd speed 1/min: 500 Del.quantity cm3/: 9,5...17,5 1000H.: (7,5...19,5)

Arrangement of drivers on enginespeed lever for exhaust-gas-

recirculation valve linkage (guage)

1st speed 1/min: 1250 Del.quantity cm3/: 23,0..24,0 1000H.: (21,5..26,0)

Automatic starting fuel delivery:

1st speed 1/min: 300 Del.quantity cm3/: -

1000H: 30,0 ind.

1/min: 480 2nd speed Del.quantity cm3/: -max. 1000H: 34,0

Shutoff electromagnet:

Cut-in

min. voltage Rated voltage : 10,0 : 12,0

Mounting and assembly dimensions:

Designation

: 3,2...3,4 K KF : K-0T mm : 1,3...1,7 MS ΠM : 3,8 : 17,0...19,0 SVS max. mm XK mm XL : 10,9...14,5 mm

Remarks:

Pump/engine assignment: Stroke in blocking position 0.73... 0.83 mm, referenced to outlet "B". Attach timing-device cover KDEP 1151.

F = Adjustment point for low full-load delivery

E = Fuel-delivery adjustment point in HBA range. (Correction by way of HBA adjusting screw).
D = Adjustment point for high full-

load delivery

Adjust part-load delivery: Setting = 12.0 mm

Note inst. in remarks column

: SOF 2,5 R : 24.10.89 Test sheet Edition

replaces

Calibrating oil : ISO 4113

: VE 4/11F1900 R294 Injection pump

Type number : 0 460 414 054

Customer-specific information

Customer : IVECO

: 8140.27.200 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil

return temp. , C . with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening |

bar: 250...253 pressure

Perforated-plate

diameter mm : 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 mm : 450 x Length

Start of delivery Prestroke mm : -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing device travel:

1/min: 1100 Speed Charge press. hPa: 1000 Setting value mm: 1,5...1,9

Supply-pump pressure:

1/min: 1100 Speed

Charge press. hPa: 1000 Setting value bar: 5,8...6,4

Full-load del. with charge press.:

1/min: 1750 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H: 54,5...55,5 Dispersion cm3/: 3,5 1000H: (4,0)

Full-load del. w/out charge press.:

 $1/\min : 550$ Speed

Del.quantity cm3/ 1000H.: 21,0...22,0

Low-idle speed regulation:

1/min: 375 Speed Charge press. hPa: -

Del.quantity cm3/ 1000H.: 13,0...17,0 Dispersion cm3/: 3,0 1000H.: (3,5)

Full-load speed regulation:

1/min: 2200 Speed Charge press. hPa: 1000 Del.quantity cm3/ 1000H: 17,5...23,5

Start:

Speed 1/min: 100 Charge press. hPa: -Del.quantity mind cm3/1000H.: 40,0

Load-dependent start of delivery:

1/min: 1750 Speed Charge press. hPa: 1000

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 1100 1st speed Charge press. hPa: 1000

TD travel mm: 1,5...1,9 mm: (1,0...2,4) 2nd speed 1/min: 1500 Charge press. hPa: 1000 TD travel

mm: 3,9...4,7 mm: (3,6...5,0)

F27

3rd speed 1/min: 1750 Charge press. hPa: 1000 TD travel mm: 5,15,9 mm: (4,86,2) Supply-pump pressure characteristic: 1st speed 1/min: 550 Charge press. hPa: 1000	Charge press. hPa: 1000 Del.quantity cm3/: 53,558,5 1000H.: (52,559,5) 8th speed 1/min: 1000 Charge press. hPa: 1000 Del.quantity cm3/: 52,557,5 1000H: (51,059,0) 9th speed 1/min: 800 Charge press. hPa: 550
Supply-pump pressure bar: 4,14,7 2nd speed 1/min: 1100 Charge press. hPa: 1000 Supply-pump pressure bar: 5,86,4 3rd speed 1/min: 1750 Charge press. hPa: 1000 Supply-pump pressure bar: 7,78,3	Del.quantity cm3/: 42,043,0 1000H: (38,546,5) 10th speed 1/min: 550 Charge press. hPa: 1000 Del.quantity cm3/: 52,558,5 1000H: (51,559,5) 11th speed 1/min: 550 Charge press. hPa: - Del.quantity cm3/: 21,022,0 1000H: (18,025,0)
Overflow quantity at overflow valve:	Zero delivery (stop):
1st speed 1/min: 550 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery—quant. and breakaway char.: 1st speed 1/min: 800* Charge—air pressure—setting point hPa: 550 LDA stroke mm: 4,7 Del.quantity cm3/: 42,043,0	Speed
5th speed 1/min: 1900 Charge press. hPa: 1000 Del.quantity cm3/: 50,555,5 1000H.: (49,556,5) 6th speed 1/min: 1750	Shutoff electromagnet: Cut-in min. voltage : 10,0
Charge press. hPa: 1000 Del.quantity cm3/: 54,555,5 1000H.: (51,558,5) 7th speed 1/min: 1500	Rated voltage : 12,0 Mounting and assembly dimensions:

_				•	
מוז	C 7	$\boldsymbol{\sigma}$	34	7	on
00	ગ ા	W		,	S 1

K	ताता	: 3,25,4
KF	m	: K-0T
MS	mm	: 0,61,0
XK	mm	: 21,823,8
XL	mm	: 12,315,7

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

Note inst. in remarks column

: PER 5,0 B1 Test sheet : 06.11.89 Edition

replaces

: ISO 4113 Calibrating oil

Injection pump : VE 4/11F1250 R266-2

: 0 460 414 057 Type number

Customer-specific information : PERKINS

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. ...C

with thermometer: 40...48 : 42...50 electronically

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 022 assembly

Openina

bar: 130...133 pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 mm: 450 x Length

Start of delivery

Prestroke mm: 0,5

(from BDC): +0.02(0.04)

Start of delivery block Piston stroke mm: 1,42

mm: +0,02(0,06)

Outlet

Injection pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1100 Setting value mm: 2,4...2,8

Supply-pump pressure:

1/min: 1100 Setting value bar: 4,9...5,5 Full-load del. w/out charge press.:

1/min: 600 Speed

Del.quantity cm3/ 1000H.: 24,0...25,0 Dispersion cm3/: 3,5

1000H.: -

Low-idle speed regulation:

1/min: 350 Speed

Del.quantity cm3/ 1000H.: 11,0...15,0 Dispersion cm3/: 3,0

1000H.: -

Full-load speed regulation:

1/min: 1350 Speed

Del.quantity cm3/

1000H: 12,0...18,0

Start:

1/min: 100 Speed Del.quantity

cm3/1000H .: 70,0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 700 1st speed

TD travel mm: 0,4...1,2

mm: (0,1...1,5)1/min: 1100 2nd speed

TD travel

mm: 2,4...2,8 mm: (1,9...3,3)

3rd speed

TD travel

1/min: 1250 mm: 2,8...3,6 mm: (2,5...3,9)

Supply-pump pressure characteristic:

1/min: 700 1st speed

Supply-pump

bar: 3,5...4,1 1/min: 1100 pressure

2nd speed

Supply-pump

bar: 4,9...5,5 1/min: 1250 pressure

3rd speed

Supply-pump

pressure bar: 5,4...6,0

Overflow quantity at overflow valve:

1/min: 600 1st speed

: 41...83 Oveflow cm3/10s: (26...98) quantity 1/min: 1250 : 55...138 2nd speed Overflow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1/min: 1430 1st speed Del.quantity cm3/: 0,0...3,0 1000H.: -1/min: 1350 2nd speed Del.quantity cm3/: 12,0...18,0 1000H.: (10,0...20,0) 3rd speed 1/min: 1250 Del.quantity cm3/: 46,5...49,5 1000H.: (45,0...51,0) 4th speed 1/min: 1100 Del.quantity cm3/: 47,0...50,0 1000H.: (45,5...51,5) 5th speed 1/min: 800 Del.quantity cm3/: 34,0...36,0 Del.quantity cmb/. -1/min: 600 6th speed Del.quantity cm3/: 24,0...25,0 1000H.: (22,0...27,0) Zero delivery (stop): Electr. shutoff: Speed 1/min: 350 ELAB volt: -ELAB Del.quantity cm3/: u, 1000H.: cm3/: 0,0...3,0Idle delivery: 1st speed 1/min: 350 Del.quantity cm3/: 11,0..15,0 1000H.: (9,0...17,0) 1/min: 400 2nd speed Del.quantity cm3/: 3,0...9,0 1000H.: (1,5...10,5) 1/min: 460 3rd speed Del.quantity cm3/: 0,0...5,0 1000H.: -Automatic starting fuel delivery: 1st speed 1/min: 300 Del.quantity cm3/: -1000H: 36,0 ind. 2nd speed 1/min: 400 Del.quantity cm3/: -1000H: 40,0

Cut-in min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions:

Designation

K mm : KF mm : K-OT
MS mm : 1,1...1,5
SVS max. mm : 4,1

Remarks:

G03

Shutoff electromagnet:

Note inst. in remarks column

: SOF 2,5 K3 : 02.11.89 Test sheet Edition

replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/11F1900 R127-3

: 0 460 414 060 Type number

Customer-specific information : IVECO-SOFIM Customer

Engine : 8140.21.290

TEST BENCH REQUIREMENTS

Calibrating-oil

return temp. _,C ...48 with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 023 assembly

Opening |

bar: 172...175 pressure

Perforated-plate

diameter mm : 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 mm: 450 x Length

Start of delivery

Prestroke nm : 0.3

(from BDC): +-0.02(0.04)

Injection pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1100 Speed Charge press. hPa: 1000 Setting value mm: 2,5...2,9

Supply-pump pressure:

1/min: 1100 Speed

Charge press. hPa: 1000 Setting value bar: 4,7...5,3

Full-load del. with charge press.:

Speed 1/min: 1100 Charge press. hPa: 1000 Del.quantity cm3/ 1000H: 44,7...45,7 Dispersion cm3/: 3,5

1000H: (4,0)

Full-load del. w/out charge press.:

1/min : 500 Speed

Del.quantity cm3/

1000H.: 38,5...39,5

Low-idle speed regulation:

1/min: 400 Speed Charge press. hPa: -

Del.quantity cm3/ 1000H.: 13,0...17,0 Dispersion cm3/: 3,0

1000H.: (4,0)

Full-load speed regulation:

1/min: 2300 Speed Charge press. hPa: 1000

Del.quantity cm3/

1000H: 15,0...21,0

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 60,0 mind

Load-dependent start of delivery:

Speed 1/min: 1100 Charge press. hPa: -

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 800 1st speed Charge press. hPa: 1000

TD travel mm: 0,5...1,3 mm: (0,2...1,6)
2nd speed 1/min: 1100 Charge press. hPa: 1000 mm: 2,5...2,9 mm: (2,0...3,4)

1/min: 1500 3rd speed

Charge press. hPa: 1000	- Del.quantity cm3/: 42,244,8 - 1000H.: (40,846,2)
charge press. Ilra. 1000	70000 (/ 0 0 // 0)
TD travel mm: 4,35,1	- 1000H.: (40,846,2)
mm: $(4,05,4)$	- 7th speed 1/min: 1100
14b at 4600	Change Transport 4000
4th speed 1/min: 1900	- charge press. nPa: 1000
Charge press. hPa: 1000	Charge press. hPa: 1000 - Del.quantity cm3/: 44,745,7 - 1000H.: (42,547,9)
Th Americal	40001 - (/2 5 /7 0)
TD travel mm: 6,16,9	- 1000H.: (42,347,7)
mm: (5,87,2)	- 8th speed 1/min: 900
(MIII (3)0111)/C	
, , , , , , , , , , , , , , , , , , ,	
Supply-pump pressure characteristic:	- Del.quantity cm3/: 37,538,5
and the same of th	- 1000H: (35,340,7) - 9th speed 1/min: 500
4	100011 (33/31.140/1)
1st speed 1/min: 500	- 9th speed 1/min: 500
Charge press. hPa: 1000	- Charge press. hPa: 1000
	5-1
Supply-pump -	- Del.quantity cm3/: 50,754,5
pressure bar: 2,73,3	- 1000H: -
2nd annual 1/min 1100	
2nd speed 1/min: 1100	- 10th speed 1/min: 500
Charge press. hPa: 1000	- Charge press. hPa: -
	Dal guartita, cin3/. 38 5 30 5
Supply-pump	- Deliquantity cm3/: 38,539,5
pressure bar: $4.75.3$	- 1000H: (36,341,7)
pressure bar: 4,75,3 3rd speed 1/min: 1900	
31 d Speed 17 1111111 1700	
Charge press. hPa: 1000	- Zero delivery (stop):
Supply-pump	
outputy forth	
pressure bar: 7,07,6	-
	- Electr. shutoff:
Constitution of a constitution	
Overflow quantity at overflow valve:	
-	- Speed 1/min: 400
1st speed 1/mins 500	- ELAB volt: -
1st speed 1/min: 500	
Charge press. hPa: -	- Del.quantity cm3/: 0,03,0
Oveflow : 4183	- max. 1000H.: -
	illax. 1000n
quantity cm3/10s: (2698)	•
2nd speed 1/min: 1900	- Idle delivery:
Channe and - 4000	Tate decireits
Charge press. hPa: 1000	
Overflow : 55138	- 1st speed 1/min: 400
	Dal guardida, cm7/s 0.0 5.0
quantity cm3/10s: (40153)	- Del.quantity cm3/: 0,05,0
4	- 1000H.: -
Delivery-quant. and breakaway char.:	- 2nd speed 1/min: 350
becively quality and bileakaway cital	5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
+	- Del.quantity cm3/: 27,033,0
1st speed 1/min: 900	- 1000H.: (25,534,5) - 3rd speed 1/min: 550
	7md annual 4/min 550
Charge-air pressure-setting	- Sra speed (/min: 550
point hPa: 400	- Del.quantity cm3/: 0,05,0
	- 1000H.: -
Del.quantity cm3/: 37,538,5	10001
1000H.: (35,340,7)	•
2nd speed 1/min: 2450	 Automatic starting fuel delivery:
	incomment searcing race accircly.
Charge press. hPa: 1000	-
Deliquantity cm3/: 0,05,0	- 1st speed 1/min: 200
10000	
1000H.: -	- Deliquantity cm3/: -
3rd speed 1/min: 2300	- ind. 1000H: 70,0
Charge press. hPa: 1000	_
that ge press. The too	
No.	21
Deciquantity distributions of	- 2nd speed 1/min: 350
Del.quantity cm3/: 15,021,0	
1000H.: (13,522,5)	- Del.quantity cm3/: -
1000H.: (13,522,5) 4th speed 1/min: 2100	
1000H.: (13,522,5) 4th speed 1/min: 2100	- Del.quantity cm3/: -
1000H.: (13,522,5) 4th speed 1/min: 2100	- Del.quantity cm3/: - - max. 1000H : 70,0 -
1000H.: (13,522,5) 4th speed 1/min: 2100 Charge press. hPa: 1000 Del.quantity cm3/: 30,038,0	- Del.quantity cm3/: -
1000H.: (13,522,5) 4th speed 1/min: 2100 Charge press. hPa: 1000 Del.quantity cm3/: 30,038,0	- Del.quantity cm3/: - - max. 1000H : 70,0 -
1000H.: (13,522,5) 4th speed 1/min: 2100 Charge press. hPa: 1000 Del.quantity cm3/: 30,038,0 1000H.: (29,538,5)	- Del.quantity cm3/: max. 1000H: 70,0 Shutoff electromagnet:
1000H.: (13,522,5) 4th speed 1/min: 2100 Charge press. hPa: 1000 Del.quantity cm3/: 30,038,0 1000H.: (29,538,5) 5th speed 1/min: 1900	- Del.quantity cm3/: max. 1000H: 70,0 - Shutoff electromagnet: - Cut-in
1000H.: (13,522,5) 4th speed 1/min: 2100 Charge press. hPa: 1000 Del.quantity cm3/: 30,038,0 1000H.: (29,538,5) 5th speed 1/min: 1900	- Del.quantity cm3/: max. 1000H: 70,0 - Shutoff electromagnet: - Cut-in - min. voltage : 10,0
1000H.: (13,522,5) 4th speed 1/min: 2100 Charge press. hPa: 1000 Del.quantity cm3/: 30,038,0 1000H.: (29,538,5) 5th speed 1/min: 1900 Charge press. hPa: 1000	- Del.quantity cm3/: max. 1000H: 70,0 - Shutoff electromagnet: - Cut-in - min. voltage : 10,0
1000H.: (13,522,5) 4th speed 1/min: 2100 Charge press. hPa: 1000 Del.quantity cm3/: 30,038,0 1000H.: (29,538,5) 5th speed 1/min: 1900 Charge press. hPa: 1000 Del.quantity cm3/: 41,544,1	- Del.quantity cm3/: max. 1000H: 70,0 - Shutoff electromagnet: - Cut-in
1000H.: (13,522,5) 4th speed 1/min: 2100 Charge press. hPa: 1000 Del.quantity cm3/: 30,038,0 1000H.: (29,538,5) 5th speed 1/min: 1900 Charge press. hPa: 1000 Del.quantity cm3/: 41,544,1 1000H.: (40,145,5)	Del.quantity cm3/: - max. 1000H: 70,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0
1000H.: (13,522,5) 4th speed 1/min: 2100 Charge press. hPa: 1000 Del.quantity cm3/: 30,038,0 1000H.: (29,538,5) 5th speed 1/min: 1900 Charge press. hPa: 1000 Del.quantity cm3/: 41,544,1 1000H.: (40,145,5)	Del.quantity cm3/: - max. 1000H: 70,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0
1000H.: (13,522,5) 4th speed 1/min: 2100 Charge press. hPa: 1000 Del.quantity cm3/: 30,038,0 1000H.: (29,538,5) 5th speed 1/min: 1900 Charge press. hPa: 1000 Del.quantity cm3/: 41,544,1 1000H.: (40,145,5) 6th speed 1/min: 1500	- Del.quantity cm3/: max. 1000H: 70,0 - Shutoff electromagnet: - Cut-in - min. voltage : 10,0
1000H.: (13,522,5) 4th speed 1/min: 2100 Charge press. hPa: 1000 Del.quantity cm3/: 30,038,0 1000H.: (29,538,5) 5th speed 1/min: 1900 Charge press. hPa: 1000 Del.quantity cm3/: 41,544,1 1000H.: (40,145,5)	Del.quantity cm3/: - max. 1000H: 70,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions:
1000H.: (13,522,5) 4th speed 1/min: 2100 Charge press. hPa: 1000 Del.quantity cm3/: 30,038,0 1000H.: (29,538,5) 5th speed 1/min: 1900 Charge press. hPa: 1000 Del.quantity cm3/: 41,544,1 1000H.: (40,145,5) 6th speed 1/min: 1500	Del.quantity cm3/: - max. 1000H: 70,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0

K mm : KF mm : K-OT
MS mm : 0,8...1,2
SVS max. mm : 4,8

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

Note inst. in remarks column

: FOR 2,5 E : 07.11.89 Test sheet Edition : 12.05.89 replaces : ISO 4113 Calibrating oil

: VE 4/11F2000 RR288-3 Injection pump

: 0 460 414 062 Type number

Customer-specific information

Customer : FORD

: 2,5 DI Engine

TEST BENCH REQUIREMENTS

Calibrating oil

return temp. .C. with thermometer : 40...48 electronically

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 023 assembly

Opening

bar: 172...175 pressure

Perforated plate

mm: 0.4 diameter

Test inj. tubing : 1 680 750 073

Outside diameter x Wall thickness : 2 mm : 450 x Length

Start of delivery Prestroke nm: -(from BDC): -

Start of delivery block mm: 0,78 Piston stroke

mm: 0.73...0.83

Outlet : B

Injection-pump setting values Test specifications in parentheses

Timing device travel:

1/min: 1250 Speed Setting value mm: 2,5...2,9 Supply-pump pressure:

1/min: 1250 Speed Setting value bar: 5,6...6,2

Full-load del. w/out charge press.:

 $1/\min : 500$ Speed

Del.quantity cm3/ 1000H.: 30,5...31,5 F

Low-idle speed regulation:

1/min: 425 Speed

Del.quantity cm3/ 1000H.: 18,0...22,0

Full-load speed regulation:

Speed 1/min: 2100

Del.quantity cm3/

1000H: 30,5...34,5

Start:

1/min: 100 Speed Del.quantity

cm3/1000H.: 62,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 800 ist speed

mm: 0,0...0,8 mm: (0,0...1,1) 1/min: 1250 TD travel

2nd speed TD travel

mm: 2,5...2,9 mm: (2,2...3,2)

1/min: 1950 3rd speed

mm: 6,0...6,8 mm: (5,7...7,1) TD travel

Supply-pump pressure characteristic:

1st speed 1/min: 500

Supply-pump

bar: 3,1...3,7 1/min: 1000 pressure 2nd speed

Supply-pump

bar: 4,8...5,4 1/min: 1250 pressure 3rd speed

Supply-pump

bar: 5,6...6,2 pressure

1/min: 1950 4th speed

Supply-pump pressure bar: 7,7...8,3

Overflow quantity at overflow valve:
1st speed 1/min: 500 Oveflow : 55100 quantity cm3/10s: (40115) 2nd speed 1/min: 1950 Overflow : 83153 quantity cm3/10s: (68168)
Delivery-quant. and breakaway char.:
1st speed 1/min: 1950 HBA stroke mm: 10,0 Del.quantity cm3/: 37,040,6 D 1000H.: (36,341,3) D 2nd speed 1/min: 2400 Del.quantity cm3/: 0,010,0
1000H.: - 3rd speed 1/min: 2200 Del.quantity cm3/: 18,026,0 1000H.: (16,028,0)
4th speed 1/min: 2100 Del.quantity cm3/: 30,534,5 1000H.: (27,537,5)
5th speed
Del.quantity cm3/: 37,741,3 1000H.: (37,042,0)
7th speed
8th speed
Zero delivery (stop):
Electr. shutoff:
Speed 1/min: 425 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: -
Idle delivery:
1st speed 1/min: 425 Del.quantity cm3/: 18,022,0 1000H.: (16,024,0) 2nd speed 1/min: 500
1000H.: (16,024,0) 2nd speed

Arrangement of drivers on enginespeed lever for exhaust-gasrecirculation valve linkage (guage)

```
1st speed
                  1/min: 1250
Del.quantity cm3/: 23,0..24,0
1000H.: (21,5..26,0)
Automatic starting fuel delivery:
1st speed
                  1/min: 300
Del.quantity cm3/: -
                  1000H: 30,0
  ind.
                  1/min: 480
2nd speed
Del.quantity cm3/: -
max. 1000H: 34,0
max.
Shutoff electromagnet:
Cut-in
min. voltage
Rated voltage
                         : 10,0
                         : 12,0
Mounting and assembly dimensions:
Designation
                   mm : 3,2...3,4

mm : K-OT

mm : 1,3...1,7

mm : 3,8

mm : 17,0...19,0

mm : 10,9...14,5
KF
MS
SVS max.
XK
XL
Remarks:
Pump/engine assignment:
Stroke in blocking position 0.73...
0.83 mm, referenced to outlet "B".
Attach timing-device cover
KDEP 1151.
F = Adjustment point for low full-load
delivery
E = Fuel-delivery adjustment point in
HBA range. (Correction by way of HBA
adjusting screw).
D = Adjustment point for high full-
load delivery
Adjust part-load delivery:
Setting = 12.0 mm
```

Note inst. in remarks column

: PER 6,0 D1 : 10.11.89 Test sheet Edition replaces : 10.07.89 : ISO 4113 Calibrating oil

Injection pump : VE 4/11F2250 R327 : 0 460 414 065 Type number

Customer-specific information : PERKINS Customer

: PRIMA N/A Engine

TEST BENCH REQUIREMENTS

Calibrating-oil

return temp. , C with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 022 assembly

Openina

bar: 130...133 pressure

Test ini. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 mm: 450 x Length

Start of delivery Prestroke mm : -(from BDC): -

Start of delivery block Piston stroke mm: 1,1 mm: -

Outlet : A

Injection pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1800 Speed Setting value mm: 4,2...4,6 KSB solenoid-operated volt: 12,0 valve

Supply-pump pressure:

1/min: 1800 Setting value bar: 6,7...7,3 KSB solenoid-operated valve volt: 12,0

Full-load del. w/out charge press.:

1/min: 450 Speed

Del.quantity cm3/ 1000H.: 32,0...33,0

KSB solenoid-operated volt: 12.0 valve

Low-idle speed regulation:

1/min: 400 Del.quantity cm3/ 1000H.: 7,0...9,0

KSB solenoid-operated

volt: 12,0 valve

Full-load speed regulation:

Speed 1/min: 2500

Del.quantity cm3/ 1000H: 28,0...30,0

KSB solenoid-operated volt: 12,0 valve

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 70,0 KSB solenoid-operated volt: 12,0 valve

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 500 1st speed mm: 1,7...1,9 mm: (1,0...2,6) * TD travel KSB solenoid-operated valve volt: -1/min: 1200 2nd speed

mm: 1,4...3,4 * TD travel mm: -

KSB solenoid-operated valve volt: -3rd speed 1/min: 1200 mm: 1,1...1,9 mm: (0,8...2,2) TD travel

KSB solenoid-operated volt: 12,0 valve

4th speed 1/min: 1500 +	2nd speed 1/min: 2600
TD travel mm: 2,53,3 + mm: (2,23,6) +	KSB solenoid-operated valve volt: 12,0
KSB solenoid-operated	Del.quantity cm3/: 0,015,0
valve volt: 12,0	1000н.: -
5th speed 1/min: 1800 +	3rd speed 1/min: 2500
TD travel mm: 4,24,6 +	KSB solenoid-operated
mm: $(3,75,1)$	valve volt: 12,0
KSB solenoid-operated +	Del.quantity cm3/: 28,030,0 1000H.: (25,033,0)
valve volt: 12,0	1000H.: (25,035,0)
6th speed 1/min: 2250	4th speed 1/min: 1000
TD travel mm: 6,47,2 + mm: (6,17,5)	KSB solenoid-operated valve volt: 12,0
KSB solenoid-operated	
valve volt: 12,0	Del.quantity cm3/: 47,548,5 E 1000H.: (45,051,0) E
1	5th speed 1/min: 450
Supply-pump pressure characteristic: +	KSB solenoid-operated
+	valve volt: 12,0
1st speed 1/min: 1000 +	Del.quantity_cm3/: 32,033,0_F
Supply-pump +	1000H.: (28,536,5) F
pressure bar: 5,35,9	Town delivery (norm)
KSB solenoid-operated +	Zero delivery (stop):
valve volt: 12,0 + 2nd speed 1/min: 1000 +	
Supply-pump	Electr. shutoff:
pressure bar: 5,35,9	Cood Control
KSB solenoid-operated +	Speed 1/min: 400
valve volt: 12,0 +	ELAB volt: -
3rd speed 1/min: 1800 +	Del.quantity cm3/: 0,03,0
Supply-pump +	max. 1000H.: -
pressure bar: 6,77,3	+ 11
KSB solenoid-operated +	Idle delivery:
valve volt: 12,0 + 4th speed 1/min: 2250 +	1st speed 1/min: 400
Supply-pump	KSB solenoid-operated
pressure bar: 7,58,1	valve volt: 12,0
KSB solenoid-operated +	Del.quantity cm3/: 7,09,0
valve volt: 12,0 +	1000H.: (4,012,0)
+	2nd speed 1/min: 500
Overflow quantity at overflow valve:	KSB solenoid-operated
4	valve volt: 12,0
1st speed 1/min: 450	Del.quantity cm3/: 1,57,5
KSB solenoid-operated + valve volt: 12,0 +	1000H.: (0,58,5)
Oveflow : 72116	Automatic starting fuel delivery:
quantity cm3/10s: (57131)	naconacto ocal cing race accivery.
2nd speed 1/min: 2250 +	1st speed 1/min: 100
KSB solenoid-operated +	KSB solenoid-operated
valve volt: 12,0 +	valve volt: 12,0
Overflow : 55111 +	Del.quantity cm3/: -
quantity cm3/10s: (40126) +	ind. 1000H: 70,0
Daldy carry ground and handley along	and annual 1/mins 600
Delivery-quant. and breakaway char.:	2nd speed 1/min: 400 KSB solenoid-operated
1st speed	valve volt: 12,0
HBA stroke mm: 10,0	Del.quantity cm3/: -
KSB solenoid-operated +	max. 1000H : 50,0
valve volt: 12,0 +	
Del.quantity cm3/: 53,558,5 D +	Shutoff electromagnet:
1000H.: (52,060,0) D +	

Cut-in

min. voltage Rated voltage : 10,0 : 12,0

Mounting and assembly dimensions:

Designation

: 3,2...3,4 : K-OT : 1,1...1,5 : 20,0...22,0 : 10,5...13,9 K KF mm mm MS XK XL mm mm mm

Remarks:

* Unscrew KSB ball valve 2 mm

Note inst. in remarks column

: SOF 2,5 R1 : 24.10.89 Test sheet Edition

replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/11F1900 R294-1

: 0 460 414 066 Type number

Customer-specific information Customer : IVECO

: 8140,27,200 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. ., C .

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250...253 pressure

Perforated-plate

diameter mm : 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 mm: 450 x Length

Start of delivery Prestroke mm : -

(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1100 Speed Charge press. hPa: 1000 Setting value mm: 1,5...1,9

Supply-pump pressure:

1/min: 1100 Speed

Charge press. hPa: 1000 Setting value bar: 5,8...6,4

Full-load del. with charge press.:

Speed 1/min: 1750 Charge press. hPa: 1000
Del.quantity cm3/
1000H.: 54,5...55,5
Dispersion cm3/: 3,5

1000H : (4,0)

Full-load del. w/out charge press.:

 $1/\min : 550$ Speed

Del.quantity cm3/

1000H.: 21,0...22,0

Low-idle speed regulation:

Speed 1/min: 375 Charge press. hPa: -

Del.quantity cm3/ 1000H.: 13,0...17,0 Dispersion cm3/: 3,0 1000H.: (3,5)

Full-load speed regulation:

1/min: 2200 Speed Charge press. hPa: 1000 Del.quantity cm3/ 1000H: 17,5...23,5

Start:

Speed 1/min: 100 Charge press. hPa: -Del.quantity cm3/1000H.: 40,0 mind

Load-dependent start of delivery:

1/min: 1750 Speed Charge press. hPa: 1000

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 1100 1st speed Charge press. hPa: 1000 mm: 1,5...1,9 mm: (1,0...2,4) TD travel

1/min: 1500 2nd speed Charge press. hPa: 1000 TD travel mm: 3,9...4,7 mm: (3,6...5,0)

3rd speed 1/min: 1750 Charge press. hPa: 1000 TD travel mm: 5,15,9 mm: (4,86,2)	† † †	Charge press. hPa: 1000 Del.quantity cm3/: 53,558,5 1000H.: (52,559,5) 8th speed 1/min: 1000
Supply-pump pressure characteristic:	Ī	Charge press. hPa: 1000 Del.quantity cm3/: 52,557,5 1000H: (51,059,0)
1st speed 1/min: 550 Charge press. hPa: 1000 Supply-pump pressure bar: 4.14.7	+	9th speed 1/min: 800 Charge press. hPa: 550 Del.quantity cm3/: 42,043,0 1000H: (38,546,5)
pressure bar: 4,14,7 2nd speed 1/min: 1100 Charge press. hPa: 1000 Supply-pump pressure bar: 5,86,4	* 	10th speed 1/min: 550 Charge press. hPa: 1000 Del.quantity cm3/: 52,558,5 1000H: (51,559,5)
3rd speed 1/min: 1750 Charge press. hPa: 1000 Supply-pump pressure bar: 7,78,3	+++++++++++++++++++++++++++++++++++++++	11th speed 1/min: 550 Charge press. hPa: - Del.quantity cm3/: 21,022,0 1000H: (18,025,0)
Overflow quantity at overflow valve:	+	Zero delivery (stop):
1st speed 1/min: 550 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow : 55138	T + + + + + + + + + + + + + + + + + + +	Electr. shutoff: Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: -
quantity cm3/10s: (40153)	+	Idle delivery:
Delivery-quant. and breakaway char:: 1st speed 1/min: 800* Charge-air pressure-setting point hPa: 550 LDA stroke mm: 4,7 Del.quantity cm3/: 42,043,0 1000H.: (38,546,5)	T + + + + + + + + + + + + + + + + + + +	1st speed 1/min: 375 Del.quantity cm3/: 13,017,0
2nd speed 1/min: 2350 Charge press. hPa: 1000 Del.quantity cm3/: 0,05,0	† † †	Del.quantity cm3/: 37,047,0 1000H.: (36,048,0)
3rd speed 1/min: 2200 Charge press. hPa: 1000 Del.quantity cm3/: 17,523,5 1000H.: (16,025,0)	++++	Automatic starting fuel delivery: 1st speed
Charge press. hPa: 1000 Del.quantity cm3/: 35,543,5 1000H.: (33,545,5)	+	2nd speed 1/min: 450 Del.quantity cm3/: - max. 1000H: 48,0
5th speed 1/min: 1900 Charge press. hPa: 1000 Del.quantity cm3/: 50,555,5 1,000H.: (49,556,5) 6th speed 1/min: 1750	- + + + + + + + + + + + + + + + + + + +	Shutoff electromagnet: Cut-in min. voltage : 10,0
Charge press. hPa: 1000 Del.quantity cm3/: 54,555,5 1000H.: (51,558,5)	+++++++++++++++++++++++++++++++++++++++	Rated voltage : 12,0 Mounting and assembly dimensions:
7th speed 1/min: 1500	T	

Designation

K	ITE	: 3,23,4
KF	mm	: K-0T
MS	mm	: 0,61,0
XK	mm	: 21,823,8
XL	mm	: 13,717,1
^ L	31885	. 10/100011/

Remarks:

Operate control lever after each manifold pressure compensator pressure change.

* Correction at adjusting nut (46)

Note inst. in remarks column

: SOF 2,5 K4 Test sheet : 02.11.89 Edition

replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/11F1900 R127-4

: 0 460 414 068 Type number

Customer-specific information : IVECO-SOFIM

Engine : 8140.27

TEST BENCH REQUIREMENTS

Calibrating oil return temp. ,C

with thermometer: 40...48 electronically

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 023 assembly

Opening

bar: 172...175 pressure

Perforated-plate

diameter mm : 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 mm: 450 x Length

Start of delivery

mm : 0.3Prestroke

(from BDC): +-0.02(0.04)

Injection pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1100 Speed Charge press. hPa: 1000 Setting value mm: 4,4...4,8

Supply-pump pressure:

1/min: 1100 Speed

Charge press. hPa: 1000 Setting value bar: 4,5...5,1

Full-load del. with charge press.:

Speed 1/min: 1100 Charge press. hPa: 1000 Del.quantity cm3/

1000H.: 39,0...40,0 cm3/: 3,5

Dispersion

1000H : (4,0)

Full-load del. w/out charge press.:

Speed $1/\min : 500$

Del.quantity cm3/

1000H.: 39,0...40,0

Low-idle speed regulation:

1/min: 350 Speed Charge press. hPa: -

1000H.: (4,0)

Full-load speed regulation:

1/min: 2300 Speed Charge press. hPa: 1000 Del.quantity cm3/ 1000H: 15,0...19,0

Start:

1/min: 100 Speed Charge press. hPa: -Del.quantity cm3/1000H.: 60,0 mind

Load-dependent start of delivery:

1/min: 1100 Speed Charge press. hPa: -

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 500 1st speed Charge press. hPa: 1000

mm: 1,3...2,1 mm: (1,0...2,4) TD travel

2nd speed 1/min: 800 Charge press. hPa: 1000 TD travel

mm: 2,8...3,6 mm: (2,5...3,9)

3rd speed 1/min: 1100	+ Del.quantity cm3/: 37,239,8
oru specu i/ilini: rius	T Detriquantity clib/. 37/237/0
Charge press. hPa: 1000	1000H.: (35,841,2)
TD travel mm: 4,44,8	+ 7th speed 1/min: 1100
mm: (3,95,3)	+ Charge press. hPa: 1000
4th speed 1/min: 1500	Charge press. hPa: 1000 Del.quantity cm3/: 39,040,0 1000H.: (36,842,2)
01	1000U . (74 0 /2 2)
Charge press. hPa: 1000 TD travel mm: 6,16,9 mm: (5,87,2)	† (UUUn.: (30,042,2)
TD travel mm: 6,16,9	+ 8th speed 1/min: 900
mm: (5,87,2)	+ Charge press. hPa: 400
10,0111.,27	+ Del.quantity cm3/: 38,039,0
Comply name appropriate abandance	10004. (75.9. 11.2)
Supply-pump pressure characteristic:	+ 1000H: (35,841,2)
	+ 9th speed 1/min: 500
1st speed 1/min: 500	+ Charge press. hPa: 1000
Charge press. hPa: 1000	+ Del.quantity cm3/: 47,250,8
	1000H: -
Supply-pump	
pressure bar: 2,73,3	+ 10th speed 1/min: 500
2nd speed 1/min: 1100	+ Charge press. hPa: -
Charge press. hPa: 1000	+ Del.quantity cm3/: 39,040,0
Supply-pump	1000H: (36,842,2)
Supply Pulip	100011. (30,0+2,2)
pressure par: 4,55,1	†
pressure bar: 4,55,1 3rd speed 1/min: 1500	+ Zero delivery (stop):
Charge press. hPa: 1000	1
Supply-pump	1
nanata han E (()	T Floor shirtses
pressure bar: 5,66,2	+ Electr. shutoff:
	+
Overflow quantity at overflow valve:	+ Speed 1/min: 350
over team quantity at ever team valerer	+ ELAB volt: -
Astronomical Almino FOO	
1st speed 1/min: 500	+ Del.quantity cm3/: 0,03,0
Charge press. hPa: -	+ max. 1000H.: -
Oveflow : 4183	+
quantity cm3/10s: (2698)	+ Idle delivery:
quantity (IID) 105. (2070)	
2014	1 140 400170171
2nd speed 1/min: 1900	+
2nd speed 1/min: 1900 Charge press. hPa: 1000	1 1st speed 1/min: 350
2nd speed 1/min: 1900 Charge press. hPa: 1000	1 1st speed 1/min: 350
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow: 55138	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0
2nd speed 1/min: 1900 Charge press. hPa: 1000	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5)
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow: 55138 quantity cm3/10s: (40153)	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5) 2nd speed 1/min: 300
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow: 55138	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5) 2nd speed 1/min: 300
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow: 55138 quantity cm3/10s: (40153)	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5) 2nd speed 1/min: 300 Del.quantity cm3/: 27,035,0 1000H.: (26,036,0)
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.:	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5) 2nd speed 1/min: 300 Del.quantity cm3/: 27,035,0 1000H.: (26,036,0)
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 900	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5) 2nd speed 1/min: 300 Del.quantity cm3/: 27,035,0 1000H.: (26,036,0) 3rd speed 1/min: 500
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 900 Charge-air pressure-setting	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5) 2nd speed 1/min: 300 Del.quantity cm3/: 27,035,0 1000H.: (26,036,0) 3rd speed 1/min: 500 Del.quantity cm3/: 0,05,0
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 900 Charge-air pressure-setting point hPa: 400	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5) 2nd speed 1/min: 300 Del.quantity cm3/: 27,035,0 1000H.: (26,036,0) 3rd speed 1/min: 500
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 900 Charge-air pressure-setting point hPa: 400	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5) 2nd speed 1/min: 300 Del.quantity cm3/: 27,035,0 1000H.: (26,036,0) 3rd speed 1/min: 500 Del.quantity cm3/: 0,05,0
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 900 Charge-air pressure-setting point hPa: 400 Del.quantity cm3/: 38,039,0	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5) 2nd speed 1/min: 300 Del.quantity cm3/: 27,035,0 1000H.: (26,036,0) 3rd speed 1/min: 500 Del.quantity cm3/: 0,05,0 1000H.: -
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery—quant. and breakaway char.: 1st speed 1/min: 900 Charge—air pressure—setting point hPa: 400 Del.quantity cm3/: 38,039,0 1000H.: (35,841,2)	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5) 2nd speed 1/min: 300 Del.quantity cm3/: 27,035,0 1000H.: (26,036,0) 3rd speed 1/min: 500 Del.quantity cm3/: 0,05,0
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 900 Charge-air pressure-setting point hPa: 400 Del.quantity cm3/: 38,039,0 1000H.: (35,841,2) 2nd speed 1/min: 2450	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5) 2nd speed 1/min: 300 Del.quantity cm3/: 27,035,0 1000H.: (26,036,0) 3rd speed 1/min: 500 Del.quantity cm3/: 0,05,0 1000H.: - Automatic starting fuel delivery:
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 900 Charge-air pressure-setting point hPa: 400 Del.quantity cm3/: 38,039,0 1000H.: (35,841,2) 2nd speed 1/min: 2450 Charge press. hPa: 1000	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5) 2nd speed 1/min: 300 Del.quantity cm3/: 27,035,0 1000H.: (26,036,0) 3rd speed 1/min: 500 Del.quantity cm3/: 0,05,0 1000H.: - Automatic starting fuel delivery: 1st speed 1/min: 300
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 900 Charge-air pressure-setting point hPa: 400 Del.quantity cm3/: 38,039,0 1000H.: (35,841,2) 2nd speed 1/min: 2450 Charge press. hPa: 1000	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5) 2nd speed 1/min: 300 Del.quantity cm3/: 27,035,0 1000H.: (26,036,0) 3rd speed 1/min: 500 Del.quantity cm3/: 0,05,0 1000H.: - Automatic starting fuel delivery: 1st speed 1/min: 300 Del.quantity cm3/: -
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 900 Charge-air pressure-setting point hPa: 400 Del.quantity cm3/: 38,039,0 1000H.: (35,841,2) 2nd speed 1/min: 2450 Charge press. hPa: 1000 Del.quantity cm3/: 0,05,0	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5) 2nd speed 1/min: 300 Del.quantity cm3/: 27,035,0 1000H.: (26,036,0) 3rd speed 1/min: 500 Del.quantity cm3/: 0,05,0 1000H.: - Automatic starting fuel delivery: 1st speed 1/min: 300 Del.quantity cm3/: -
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 900 Charge-air pressure-setting point hPa: 400 Del.quantity cm3/: 38,039,0 1000H.: (35,841,2) 2nd speed 1/min: 2450 Charge press. hPa: 1000 Del.quantity cm3/: 0,05,0 1000H.: -	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5) 2nd speed 1/min: 300 Del.quantity cm3/: 27,035,0 1000H.: (26,036,0) 3rd speed 1/min: 500 Del.quantity cm3/: 0,05,0 1000H.: - Automatic starting fuel delivery: 1st speed 1/min: 300
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 900 Charge-air pressure-setting point hPa: 400 Del.quantity cm3/: 38,039,0 1000H.: (35,841,2) 2nd speed 1/min: 2450 Charge press. hPa: 1000 Del.quantity cm3/: 0,05,0 1000H.: - 3rd speed 1/min: 2300	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5) 2nd speed 1/min: 300 Del.quantity cm3/: 27,035,0 1000H.: (26,036,0) 3rd speed 1/min: 500 Del.quantity cm3/: 0,05,0 1000H.: - Automatic starting fuel delivery: 1st speed 1/min: 300 Del.quantity cm3/: - ind. 1000H: 60,0
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 900 Charge-air pressure-setting point hPa: 400 Del.quantity cm3/: 38,039,0 1000H.: (35,841,2) 2nd speed 1/min: 2450 Charge press. hPa: 1000 Del.quantity cm3/: 0,05,0 1000H.: - 3rd speed 1/min: 2300 Charge press. hPa: 1000	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5) 2nd speed 1/min: 300 Del.quantity cm3/: 27,035,0 1000H.: (26,036,0) 3rd speed 1/min: 500 Del.quantity cm3/: 0,05,0 1000H.: - Automatic starting fuel delivery: 1st speed 1/min: 300 Del.quantity cm3/: - ind. 1000H: 60,0 2nd speed 1/min: 400
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 900 Charge-air pressure-setting point hPa: 400 Del.quantity cm3/: 38,039,0 1000H.: (35,841,2) 2nd speed 1/min: 2450 Charge press. hPa: 1000 Del.quantity cm3/: 0,05,0 1000H.: - 3rd speed 1/min: 2300 Charge press. hPa: 1000	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5) 2nd speed 1/min: 300 Del.quantity cm3/: 27,035,0 1000H.: (26,036,0) 3rd speed 1/min: 500 Del.quantity cm3/: 0,05,0 1000H.: - Automatic starting fuel delivery: 1st speed 1/min: 300 Del.quantity cm3/: - ind. 1000H: 60,0 2nd speed 1/min: 400 Del.quantity cm3/: -
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 900 Charge-air pressure-setting point hPa: 400 Del.quantity cm3/: 38,039,0 1000H.: (35,841,2) 2nd speed 1/min: 2450 Charge press. hPa: 1000 Del.quantity cm3/: 0,05,0 1000H.: - 3rd speed 1/min: 2300 Charge press. hPa: 1000 Del.quantity cm3/: 15,019,0	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5) 2nd speed 1/min: 300 Del.quantity cm3/: 27,035,0 1000H.: (26,036,0) 3rd speed 1/min: 500 Del.quantity cm3/: 0,05,0 1000H.: - Automatic starting fuel delivery: 1st speed 1/min: 300 Del.quantity cm3/: - ind. 1000H: 60,0 2nd speed 1/min: 400 Del.quantity cm3/: -
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 900 Charge-air pressure-setting point hPa: 400 Del.quantity cm3/: 38,039,0 1000H.: (35,841,2) 2nd speed 1/min: 2450 Charge press. hPa: 1000 Del.quantity cm3/: 0,05,0 1000H.: - 3rd speed 1/min: 2300 Charge press. hPa: 1000 Del.quantity cm3/: 15,019,0 1000H.: (12,521,5)	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5) 2nd speed 1/min: 300 Del.quantity cm3/: 27,035,0 1000H.: (26,036,0) 3rd speed 1/min: 500 Del.quantity cm3/: 0,05,0 1000H.: - Automatic starting fuel delivery: 1st speed 1/min: 300 Del.quantity cm3/: - ind. 1000H: 60,0 2nd speed 1/min: 400
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 900 Charge-air pressure-setting point hPa: 400 Del.quantity cm3/: 38,039,0 1000H.: (35,841,2) 2nd speed 1/min: 2450 Charge press. hPa: 1000 Del.quantity cm3/: 0,05,0 1000H.: - 3rd speed 1/min: 2300 Charge press. hPa: 1000 Del.quantity cm3/: 15,019,0 1000H.: (12,521,5) 4th speed 1/min: 2150	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5) 2nd speed 1/min: 300 Del.quantity cm3/: 27,035,0 1000H.: (26,036,0) 3rd speed 1/min: 500 Del.quantity cm3/: 0,05,0 1000H.: - Automatic starting fuel delivery: 1st speed 1/min: 300 Del.quantity cm3/: - ind. 1000H: 60,0 2nd speed 1/min: 400 Del.quantity cm3/: - max. 1000H: 65,0
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 900 Charge-air pressure-setting point hPa: 400 Del.quantity cm3/: 38,039,0	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5) 2nd speed 1/min: 300 Del.quantity cm3/: 27,035,0 1000H.: (26,036,0) 3rd speed 1/min: 500 Del.quantity cm3/: 0,05,0 1000H.: - Automatic starting fuel delivery: 1st speed 1/min: 300 Del.quantity cm3/: - ind. 1000H: 60,0 2nd speed 1/min: 400 Del.quantity cm3/: -
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 900 Charge-air pressure-setting point hPa: 400 Del.quantity cm3/: 38,039,0	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5) 2nd speed 1/min: 300 Del.quantity cm3/: 27,035,0 1000H.: (26,036,0) 3rd speed 1/min: 500 Del.quantity cm3/: 0,05,0 1000H.: - Automatic starting fuel delivery: 1st speed 1/min: 300 Del.quantity cm3/: - ind. 1000H: 60,0 2nd speed 1/min: 400 Del.quantity cm3/: - max. 1000H: 65,0 Shutoff electromagnet:
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 900 Charge-air pressure-setting point hPa: 400 Del.quantity cm3/: 38,039,0	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5) 2nd speed 1/min: 300 Del.quantity cm3/: 27,035,0 1000H.: (26,036,0) 3rd speed 1/min: 500 Del.quantity cm3/: 0,05,0 1000H.: - Automatic starting fuel delivery: 1st speed 1/min: 300 Del.quantity cm3/: - ind. 1000H: 60,0 2nd speed 1/min: 400 Del.quantity cm3/: - max. 1000H: 65,0 Shutoff electromagnet:
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery—quant. and breakaway char.: 1st speed 1/min: 900 Charge—air pressure—setting point hPa: 400 Del.quantity cm3/: 38,039,0	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5) 2nd speed 1/min: 300 Del.quantity cm3/: 27,035,0 1000H.: (26,036,0) 3rd speed 1/min: 500 Del.quantity cm3/: 0,05,0 1000H.: - Automatic starting fuel delivery: 1st speed 1/min: 300 Del.quantity cm3/: - ind. 1000H: 60,0 2nd speed 1/min: 400 Del.quantity cm3/: - max. 1000H: 65,0 Shutoff electromagnet: Cut-in
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery—quant. and breakaway char.: 1st speed 1/min: 900 Charge—air pressure—setting point hPa: 400 Del.quantity cm3/: 38,039,0	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5) 2nd speed 1/min: 300 Del.quantity cm3/: 27,035,0 1000H.: (26,036,0) 3rd speed 1/min: 500 Del.quantity cm3/: 0,05,0 1000H.: - Automatic starting fuel delivery: 1st speed 1/min: 300 Del.quantity cm3/: - ind. 1000H: 60,0 2nd speed 1/min: 400 Del.quantity cm3/: - max. 1000H: 65,0 Shutoff electromagnet: Cut-in min. voltage : 10,0
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery—quant. and breakaway char.: 1st speed 1/min: 900 Charge—air pressure—setting point hPa: 400 Del.quantity cm3/: 38,039,0	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5) 2nd speed 1/min: 300 Del.quantity cm3/: 27,035,0 1000H.: (26,036,0) 3rd speed 1/min: 500 Del.quantity cm3/: 0,05,0 1000H.: - Automatic starting fuel delivery: 1st speed 1/min: 300 Del.quantity cm3/: - ind. 1000H: 60,0 2nd speed 1/min: 400 Del.quantity cm3/: - max. 1000H: 65,0 Shutoff electromagnet: Cut-in
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 900 Charge-air pressure-setting point hPa: 400 Del.quantity cm3/: 38,039,0	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5) 2nd speed 1/min: 300 Del.quantity cm3/: 27,035,0 1000H.: (26,036,0) 3rd speed 1/min: 500 Del.quantity cm3/: 0,05,0 1000H.: - Automatic starting fuel delivery: 1st speed 1/min: 300 Del.quantity cm3/: - ind. 1000H: 60,0 2nd speed 1/min: 400 Del.quantity cm3/: - max. 1000H: 65,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 900 Charge-air pressure-setting point hPa: 400 Del.quantity cm3/: 38,039,0	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5) 2nd speed 1/min: 300 Del.quantity cm3/: 27,035,0 1000H.: (26,036,0) 3rd speed 1/min: 500 Del.quantity cm3/: 0,05,0 1000H.: - Automatic starting fuel delivery: 1st speed 1/min: 300 Del.quantity cm3/: - ind. 1000H: 60,0 2nd speed 1/min: 400 Del.quantity cm3/: - max. 1000H: 65,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 900 Charge-air pressure-setting point hPa: 400 Del.quantity cm3/: 38,039,0	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5) 2nd speed 1/min: 300 Del.quantity cm3/: 27,035,0 1000H.: (26,036,0) 3rd speed 1/min: 500 Del.quantity cm3/: 0,05,0 1000H.: - Automatic starting fuel delivery: 1st speed 1/min: 300 Del.quantity cm3/: - ind. 1000H: 60,0 2nd speed 1/min: 400 Del.quantity cm3/: - max. 1000H: 65,0 Shutoff electromagnet: Cut-in min. voltage : 10,0
2nd speed 1/min: 1900 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery—quant. and breakaway char.: 1st speed 1/min: 900 Charge—air pressure—setting point hPa: 400 Del.quantity cm3/: 38,039,0	1st speed 1/min: 350 Del.quantity cm3/: 13,017,0 1000H.: (10,519,5) 2nd speed 1/min: 300 Del.quantity cm3/: 27,035,0 1000H.: (26,036,0) 3rd speed 1/min: 500 Del.quantity cm3/: 0,05,0 1000H.: - Automatic starting fuel delivery: 1st speed 1/min: 300 Del.quantity cm3/: - ind. 1000H: 60,0 2nd speed 1/min: 400 Del.quantity cm3/: - max. 1000H: 65,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0

K mm : KF mm : K-OT
MS mm : 1,0...1,4
SVS max. mm : 2,4

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

Note inst. in remarks column

: SOF 2,5 P5 Test sheet : 24.10.89 Edition

replaces

Calibrating oil : ISO 4113

: VE 4/11F1900 R350 Injection pump

: 0 460 414 070 Type number

Customer-specific information Customer : IVECO-SOFIM

: 8140.27 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil

return temp. _,C ... with thermometer : 40...48 : 42...50 electronically

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250...253 pressure

Perforated-plate

diameter mm : 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 mm : 450 x Length

Injection pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1100 Speed Charge press. hPa: 1000 Setting value mm: 2.5...2.9 Setting value

Supply-pump pressure:

1/min: 1100 Speed Charge press. hPa: 1000 Setting value bar: 5.6...6.2

Full-load del. with charge press.:

1/min: 1750 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 55.0...56.0 Dispersion cm3/: 3.5 1000H: (4.0)

Full-load del. w/out charge press.:

1/min : 500 Speed

Del.quantity cm3/

1000H.: 16.5...17.5

Low-idle speed regulation:

1/min: 325 Speed

Del.quantity cm3/ 1000H.: 10.0...14.0

cm3/: 3.0Dispersion 1000H.: (3.5)

Full-load speed regulation:

1/min: 2100 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H: 19.5...25.5

Start:

Speed 1/min: 100 Del.quantity mind cm3/1000H.: 40.0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 900 Charge press. hPa: 1000

mm: 1.1...1.9 TD travel

mm: (0.8...2.2)1/min: 1100

2nd speed Charge press. hPa: 1000

TD travel mm: 2.5...2.9

mm: (2.0...3.4)

1/min: 1900 3rd speed Charge press. hPa: 1000 TD travel

mm: 7.1...7.9 mm: (6.8...8.2)

Supply-pump pressure characteristic:

1st speed 1/min: 500 Charge press. hPa: 1000

Supply-pump +	9th speed 1/min: 500
pressure bar: 3.64.2	Charge press. hPa: 1000
bar: (3.34.5)	Del.quantity cm3/: 48.554.5
2nd speed 1/min: 1100 +	1000H: (47.555.5)
Charge press. hPa: 1000	10th speed 1/min: 500
Supply-pump +	Charge press. hPa: -
pressure bar: 5.66.2	Del.quantity cm3/: 16.517.5
bar: (5.36.5)	1000H: (13.520.5)
3rd speed 1/min: 1900	
Charge press. hPa: 1000	Zero delivery (stop):
Supply-pump +	zoro doctrory totops.
pressure bar: 7.68.2	
bar: (7.38.5)	Electr. shutoff:
1	Eccci. Silutoir.
Overflow quantity at overflow valve:	Speed 1/min: 325
over row qualitity at over row vacve.	ELAB volt: -
1st speed 1/min: 500	Dol guantity and 10 7 0
Change proce book	Del.quantity cm3/: 0.03.0 max. 1000H.: -
Charge press. hPa: -	max. 1000H.: -
Oveflow : 4183	Tall a salad di camina
quantity cm3/10s: (2698)	Idle delivery:
2nd speed 1/min: 1900 +	4.5
Charge press. hPa: 1000	1st speed 1/min: 325
Overflow : 55138 +	Del.quantity cm3/: 3141
quantity cm3/10s: (40153)	1000н.: (3042)
†	2nd speed 1/min: 325
Delivery-quant. and breakaway char.: +	Del.quantity cm3/: 1014
+	1000H.: (8.016.0)
1st speed 1/min: 800*	3rd speed 1/min: 450
Charge-air pressure-setting +	Del.quantity cm3/: 0.05.0
point hPa: 400	1000H.: (0.05.0)
Del.quantity cm3/: 42.543.5	
1000H.: (39.047.0)	Arrangement of drivers on engine-
2nd speed 1/min: 2350 +	speed lever for exhaust-gas-
Charge press. hPa: 1000	recirculation valve linkage (guage)
Del.quantity cm3/: 0.05.0	Toothousactor, factor stillings againger
1000H.: (0.05.0)	1st speed 1/min: 1000
3rd speed 1/min: 2100	Charge press. hPa: 1000
Charge press. hPa: 1000	Del.quantity cm3/: 6.17.1
Del.quantity cm3/: 19.525.5	1000H.: (3.110.1)
1000H.: (18.027.0)	(000)
4th speed 1/min: 2000	Automatic starting fuel delivery:
Change proces has 1000	Automatic starting fuel decivery.
Charge press. hPa: 1000	1st speed 1/min: 300
Del.quantity cm3/: 40.048.0	
1000H.: (38.050.0)	Del.quantity cm3/: - ind. 1000H: 40.0
5th speed 1/min: 1900	ind. 1000H: 40.0
Charge press. hPa: 1000	2 d an and 4 forting 100
Del.quantity cm3/: 51.056.0	2nd speed 1/min: 400
1000H.: (50.057.0)	Del.quantity_cm3/: -
6th speed 1/min: 1750 +	max. 1000H: 45.0
Charge press. hPa: 1000	
Del.quantity cm3/: 55.056.0 +	Shutoff electromagnet:
1000H.: (52.059.0)	
7th speed 1/min: 1500 +	Cut-in
Charge press. hPa: 1000 +	min. voltage : 10.0
Charge press. hPa: 1000 + Del.quantity cm3/: 52.557.5 +	Rated voltage : 12.0
1000H.: (51.558.5)	-
8th speed 1/min: 1000 +	Mounting and assembly dimensions:
Charge press. hPa: 1000	
Del.quantity cm3/: 49.554.5	Designation
1000H: (48.056.0)	K mm : 3.23.4

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

Note inst. in remarks column

: FOR 2,5 F : 07.11.89 Test sheet Edition replaces

Calibrating oil : ISO 4113

: VE 4/11F2000 R366 Injection pump

Type number : 0 460 414 073

Customer-specific information

Customer : FORD

Engine : 2,5 DI

TEST BENCH REQUIREMENTS

Calibrating oil

return temp. ,C . with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 023 assembly

Opening |

bar: 172...175 pressure

Perforated plate

mm : 0.4diameter

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 mm: 450 x Length

Start of delivery Prestroke mm : -(from BDC): -

Start of delivery block mm: 0,78 Piston stroke

mm: 0,73...0,83

Outlet. : B

Injection pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250 Setting value mm: 2,5...2,9

Supply-pump pressure:

1/min: 1250 Setting value bar: 5,6...6,2

Full-load del. w/out charge press.:

1/min : 500 Speed

Del.quantity cm3/

1000H.: 30,5...31,5 F

Low-idle speed regulation:

Speed 1/min: 425

Del.quantity cm3/

1000H.: 16,0...20,0

Full-load speed regulation:

Speed 1/min: 2100

Del.quantity cm3/

1000H: 30,5...34,5

Start:

Speed 1/min: 100 Del.quantity

mind cm3/1000H.: 62,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800

TD travel mm: 0,0...0,8mm: (0,0...1,1)

1/min: 1250 2nd speed TD travel

mm: 2,5...2,9 mm: (2,2...3,2)

1/min: 1950 3rd speed TD travel mm: 6,0...6,8

mm: (5,7...7,1)

Supply-pump pressure characteristic:

1st speed 1/min: 500

Supply-pump

bar: 3,1...3,7 1/min: 1000 pressure

2nd speed

Supply-pump

bar: 4,8...5,4 1/min: 1250 pressure 3rd speed

Supply-pump

bar: 5,6...6,2 pressure

1/min: 1950 4th speed

Supply-pump bar: 7,7...8,3 pressure

Overflow quantity at overflow valve:	1st speed 1/m Del.quantity cm
1st speed	1000
quantity cm3/10s: (40115) - 2nd speed 1/min: 1950 -	Automatic starti
Overflow : 83153 - quantity cm3/10s: (68168) -	f 1st speed 1/m Del.quantity cm ind. 100
Delivery-quant. and breakaway char.:	2nd speed 1/m
1st speed 1/min: 1950 - HBA stroke mm: 10,0 -	Del.quantity cm max. 1000
Del.quantity cm3/: 37,040,6 D - 1000H.: (36,341,3) D - 2nd speed 1/min: 2400 -	Shutoff electrom
Del.quantity cm3/: 0,010,0 - 1000H.: -	Cut-in min. voltage
3rd speed 1/min: 2200 Del.quantity cm3/: 18,026,0	Rated voltage
1000H.: (16,028,0) 4th speed 1/min: 2100	Mounting and ass Designation
Del.quantity cm3/: 30,534,5 1000H.: (27,537,5) 5th speed 1/min: 1950	- Kesignacion - Kesignacion - Kesignacion
Del.quantity cm3/: 37,040,6	MS mm SVS max. mm
1000H.: (36,341,3) 6th speed	XK mm XL mm
1000H.: (37,042,0) 7th speed	Remarks:
1000H.: (33,538,5) E	Pump/engine assi Stroke in blocki
8th speed 1/min: 500 Del.quantity cm3/: 30,531,5 F 1000H: (26,036,0) F	- 0.83 mm, referender Attach timing-de
Zero delivery (stop):	- KDEP 1151.
Electr. shutoff:	F = Adjustment po delivery
Speed 1/min: 425	- E = Fuel-deliver - HBA range. (Corr
Del.quantity cm3/: 0,03,0 max. 1000H.: -	adjusting screw)D = Adjustment po
Idle delivery:	- load delivery
1st speed	Adjust part-load
1000H.: (14,022,0) - 2nd speed 1/min: 500 -	Setting = 12.0 mm
Del.quantity cm3/: 9,517,5 - 1000H.: (7,519,5) -	

+

min: 1250 m3/: 23,0..24,0 OH.: (21,5..26,0) ing fuel delivery: min: 300 m3/: -00H: 30,0 min: 480 m3/: -OH : 34,0 magnet: : 10,0 : 12,0 sembly dimensions: m : 3,2...3,4 m : K-OT m : 1,3...1,7 m : 3,8 m : 17,0...19,0 m : 10,9...14,5 ignment: ing position 0.73... nced to outlet "B". evice cover point for low full-load ry adjustment point in rection by way of HBA point for high full-

d delivery: m

Arrangement of drivers on enginespeed lever for exhaust-gas-recirculation valve linkage (guage)

Note inst. in remarks column

: FOR 2,5 G : 07.11.89 Test sheet **Fdition**

replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/11F2000 R366-1

Type number : 0 460 414 074

Customer-specific information

Customer : FORD

Engine : 2,5 DI

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. C.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 023 assembly

Openina .

bar: 172...175 pressure

Perforated plate

diameter mm : 0.4

Test inj. tubing : 1 680 750 073

Outside diameter x Wall thickness : 2 mm : 450 x Length

Start of delivery Prestroke mm : -

(from BDC): -

Start of delivery block Piston stroke mm: 0,78

mm: 0,73...0,83

Outlet : B

Injection pump setting values Test specifications in parentheses

Timing device travel:

1/min: 1250 Speed Setting value mm: 2,5...2,9 Supply-pump pressure:

1/min: 1250 Speed Setting value bar: 5,6...6,2

Full-load del. w/out charge press.:

1/min : 500 Speed

Del.quantity cm3/ 1000H.: 30,5...31,5 F

Low-idle speed regulation:

1/min: 425 Speed

Del.quantity cm3/ 1000H.: 18,0...22,0

Full-load speed regulation:

Speed 1/min: 2100

Del.quantity cm3/

1000H: 30,5...34,5

Start:

Speed 1/min: 100 Del.quantity

cm3/1000H.: 62,0 mind '

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 800 1st speed

TD travel mm: 0,0...0,8mm: (0,0...1,1) 1/min: 1250

2nd speed

mm: 2,5...2,9 mm: (2,2...3,2) TD travel

1/min: 1950 3rd speed

mm: 6,0...6,8 TD travel

mm: (5,7...7,1)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 3,1...3,7 1/min: 1000 pressure 2nd speed

Supply-pump

bar: 4,8...5,4 1/min: 1250 pressure

3rd speed

Supply-pump bar: 5,6...6,2 pressure

1/min: 1950 4th speed

Supply-pump bar: 7,7...8,3 pressure

Overflow quantity at overflow valve:
1st speed
Delivery-quant. and breakaway char.:
1st speed 1/min: 1950 HBA stroke mm: 10,0 Del.quantity cm3/: 37,040,6 D
1000H.: - 3rd speed
4th speed
1000H.: (27,537,5) 5th speed 1/min: 1950 Del.quantity cm3/: 37,040,6 1000H.: (36,341,3)
6th speed 1/min: 1700 Del.quantity cm3/: 37,741,3 1000H.: (37,042,0)
7th speed 1/min: 1000 Del.quantity cm3/: 35,536,5 E 1000H.: (33,538,5) E
8th speed 1/min: 500 Del.quantity cm3/: 30,531,5 F 1000H: (26,036,0) F
Zero delivery (stop):
Electr. shutoff:
Speed 1/min: 425 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: -
Idle delivery:
1st speed 1/min: 425 Del.quantity cm3/: 18,022,0
(COO (10) C / / 20 + 6 (1 / 2 /

Arrangement of drivers on enginespeed lever for exhaust-gasrecirculation valve linkage (guage)

1st speed 1/min: 1250 Del.quantity cm3/: 23,0..24,0 1000H.: (21,5..26,0) Automatic starting fuel delivery: 1/min: 300 1st speed Del.quantity cm3/: -ind. 1000H: 30,0 1/min: 480 2nd speed Del.quantity cm3/: - max. 1000H: 34,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation K : 3,2...3,4 mm : K-0T : 1,3...1,7 : 3,8 KF mm MS mm SVS max. mm mm : 17,0...19,0 mm : 10,9...14,5 XK XL Remarks: Pump/engine assignment: Stroke in blocking position 0.73... 0.83 mm, referenced to cutlet "B". Attach timing-device cover KDEP 1151. F = Adjustment point for low full-load delivery E = Fuel-delivery adjustment point in HBA range. (Correction by way of HBA adjusting screw).
D = Adjustment point for high fullload delivery

Adjust part-load delivery: Setting = 12.0 mm

Note inst. in remarks column

: FOR 2,5 H : 07.11.89 Test sheet Edition

replaces

Calibrating oil : ISO 4113

: VE 4/11F2000 R366-2 Injection pump

: 0 460 414 075 Type number

Customer-specific information

Customer : FORD

: 2,5 DI Engine

TEST BENCH REQUIREMENTS

Calibrating oil return temp. "C.

with thermometer: 40...48 : 42...50 electronically

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 023

Opening 1 0 1

pressure bar: 172...175

Perforated plate

mm : 0.4diameter

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 mm: 450 x Length

Start of delivery Prestroke mm : -(from BDC): -

Start of delivery block mm: 0,78 Piston stroke

mm: 0,73...0,83

Outlet : B

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1250 Setting value mm: 2,5...2,9 Supply-pump pressure:

1/min: 1250 Speed Setting value bar: 5,6...6,2

Full-load del. w/out charge press.:

 $1/\min : 500$ Speed

Del.quantity cm3/

1000H.: 30,5...31,5 F

Low-idle speed regulation:

1/min: 425 Speed

Del.quantity cm3/

1000H.: 16,0...20,0

Full-load speed regulation:

Speed 1/min: 2100

Del.quantity cm3/

1000H: 30,5...34,5

Start:

Speed 1/min: 100 Del.quantity cm3/1000H.: 62,0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing device characteristic:

1st speed 1/min: 800

mm: 0,0...0,8 TD travel mm: (0,0...1,1)

1/min: 1250 2nd speed

mm: 2,5...2,9 mm: (2,2...3,2) TD travel

1/min: 1950 3rd speed

TD travel mm: 6,0...6,8

mm: (5,7...7,1)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 3,1...3,7 1/min: 1000 pressure 2nd speed

Supply-pump

bar: 4,8...5,4 1/min: 1250 pressure

3rd speed

Supply-pump bar: 5,6...6,2 pressure

1/min: 1950 4th speed

Supply-pump bar: 7,7...8,3 pressure

	+ Del.quantity cm3/: -
Overflow quantity at overflow valve:	† ind. 1000H: 30,0
1st speed 1/min: 500 Oveflow : 55100	2nd speed 1/min: 480 Del.quantity cm3/: - max. 1000H: 34,0
quantity cm3/10s: (40115) 2nd speed 1/min: 1950	+ max. 1000H: 34,0
Overflow : 83153 quantity cm3/10s: (68168)	Shutoff electromagnet:
Delivery-quant. and breakaway char.:	+ Cut-in + min. voltage : 10,0 + Rated voltage : 12,0
1st speed 1/min: 1950 HBA stroke mm: 10,0 Del.quantity cm3/: 37,040,6 D	Mounting and assembly dimensions:
1000H.: (36,341,3) D	T Designation
2nd speed 1/min: 2400 Del.quantity cm3/: 0,010,0	+ K mn : 3,23,4 + KF mm : K-OT
1000H.: - 3rd speed 1/min: 2200	+ MS mm : 1,31,7 + SVS max. mm : 3,8
Del.quantity cm3/: 18,026,0 1000H.: (16,028,0)	+ SVS max. mm : 3,8 + XK mm : 17,019,0 + XL mm : 10,914,5
4th speed 1/min: 2100	Remarks:
Del.quantity cm3/: 30,534,5 1000H.: (27,537,5)	+
5th speed	 Pump/engine assignment: Stroke in blocking position 0.73 0.83 mm, referenced to outlet "B".
6th speed 1/min: 1700 Del.quantity cm3/: 37,741,3 1000H.: (37,042,0)	Attach timing-device cover KDEP 1151.
7th speed 1/min: 1000	Ŧ
Del.quantity cm3/: 35,536,5 E 1000H.: (33,538,5) E	F = Adjustment point for low full-load
8th speed 1/min: 500 Del.quantity cm3/: 30,531,5 F	<pre>delivery E = Fuel-delivery adjustment point in</pre>
1000H: (26,036,0) F	+ HBA range. (Correction by way of HBA + adjusting screw).
Zero delivery (stop):	D = Adjustment point for high full- load delivery
Electr. shutoff:	‡
Speed 1/min: 425	Ţ
ELAB volt: - Del.quantity cm3/: 0,03,0	‡
max. 1000H.: -	‡
Idle delivery:	+
1st speed	
1000H.: (14,022,0) 2nd speed 1/min: 500	-
Del.quantity cm3/: 9,517,5 1000H.: (7,519,5)	Ī
Automatic starting fuel delivery:	1
1st speed 1/min: 300	Ţ

Note inst. in remarks column

: VOL 4,1 H1 Test sheet Edition : 18.07.89

replaces

Calibrating oil : ISO 4113

: VE 6/11F1900 L218-8 Injection pump

: 0 460 416 065 Type number

Customer-specific information Customer : PENTA

: TAMD 41B Engine

k: 132 Power Speed 1/mi: -

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. , C .

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening |

bar: 130...133 pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 450 x Length

Start of delivery

Prestroke

e mm: 0,3 (from BDC): +0,02(0,04)

Injection-pump setting values Test specifications in parentheses

Timing device travel:

1/min: 1200 Speed Charge press. hPa: 1000 Setting value mm: 2,0...2,4

Supply-pump pressure:

1/min: 1200 Speed

Charge press. hPa: 1000 Setting value bar: 5,9...6,5

Full-load del. with charge press.:

Speed 1/min: 1500 Charge press. hPa: 1000 Del.quantity cm3/ 1000H.: 88,0...89,0

cm3/ : 5,0 1000H : -Dispersion

Full-load del. w/out charge press.:

 $1/\min : 650$ Speed

Del.quantity cm3/ 1000H.: 58,5...59,5

Low-idle speed regulation:

Speed 1/min: 325 Charge press. hPa: Del.quantity cm3/
1000H.: 25,0...29,0

Full-load speed regulation:

Speed 1/min: 2050 Charge press. hPa: 1000 Del.quantity cm3/ 1000H: 67,0...73,0

Start:

1/min: 100 Speed

Del.quantity mind cm3/1000H.: 80,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000 Charge press. hPa: 1000

TD travel mm: 0,6...1,6

mm: (0,4...1,8)

2nd speed 1/min: 1200 Charge press. hPa: 1000 TD travel mm: 2,0...2,4 mm: (1,5...2,9)

3rd speed 1/min: 1700 Charge press. hPa: 1000

mm: 3,5...4,3 mm: (3,2...4,6) TD travel

1/min: 1900 4th speed Charge press. hPa: 1000

TD travel

mm: 3,7...4,5mm: -

G27

Supply-pump pressure characteristic:	Del. quantity cm3/: 92,095,0
4	+ 1000H.: (90,596,5)
1st speed 1/min: 500	+ 8th speed 1/min: 800
Charge press. hPa: 1000	+ Charge press. hPa: 200
Supply-pump	+ Del.quantity cm3/: 72,573,5
pressure bar: 4,24,8	1000H: (70,076,0) + 9th speed 1/min: 800
2nd speed 1/min: 1000	9th speed 1/min: 800
Charge press. hPa: 1000	+ Charge press. hPa: 1000 + Del.quantity cm3/: 78,581,5
Supply-pump pressure bar: 5,56,1	1000H: (77,083,0)
3rd speed 1/min: 1200	10th speed 1/min: 650
Charge press. hPa: 1000	Charge press. hPa: -
Supply-pump	+ Del.quantity cm3/: 58,559,5
pressure bar: 5,96,5	+ 1000H: (56,062,0)
pressure bar: 5,96,5 4th speed 1/min: 1900	+
Charge press. hPa: 1000	+ Zero delivery (stop):
Supply-pump	+
pressure bar: 7,48,0	Mech. shutoff:
Overflow quantity at overflow valve:	+ Speed 1/min: 1900
over real quality at over real vacve.	+ Del.quantity cm3/: 03
1st speed 1/min: 650	1000H.: -
Charge press. hPa: 1000	+
Oveflow: 4183	+ Electr. shutoff:
quantity cm3/10s: (2698)	+
2nd speed 1/min: 1900	+ Speed 1/min: 325
Charge press. hPa: 1000	+ ELAB volt: -
Overflow : 55138	+ Del.quantity cm3/: 0,03,0
quantity cm3/10s: (40153)	+ max. 1000H.: -
Delivery-quant. and breakaway char.:	Idle delivery:
	+
1st speed	+ 1st speed 1/min: 325
Charge-air pressure-setting	+ Del.quantity cm3/: 25,029,0
point hPa: 200	1000H.: (22,032,0)
LDA stroke mm: 4,5	+ 2nd speed 1/min: 400
Del.quantity cm3/: 72,573,5	Del.quantity cm3/: 5.011.0 1000H.: (3,512,5)
1000H.: (70,076,0) 2nd speed	3rd speed 1/min: 480
Chargo proce bla: 1000	L hel quantity cm3/. 0 0 3 0
Charge press. hPa: 1000 Del.quantity cm3/: 0,04,0	Del.quantity cm3/: 0,03,0 1000H.: -
1000H.: -	100011.
3rd speed 1/min: 2150	Automatic starting fuel delivery:
Charge press. hPa: 1000	+
Del.quantity cm3/: 4,511,5	+ 1st speed 1/min: 300
1000H.: -	+ Del.quantity cm3/: -
4th speed 1/min: 2050	+ ind. 1000H: 70,0
Charge press. hPa: 1000	†
Del.quantity cm3/: 67,073,0	+ 2nd speed 1/min: 500
1000H.: (64,076,0)	+ Del.quantity cm3/: -
5th speed 1/min: 1900	+ max. 1000H: 70,0
Charge press. hPa: 1000	Chistoff alastramana
Del.quantity cm3/: 79,083,0 1000H.: (77,085,0)	Shutoff electromagnet:
Sth speed 1/min: 1500	T Cut-in
6th speed	+ min. voltage : 10,0
Del.quantity cm3/: 88,089,0	Rated voltage : 12,0
1000H.: (86,290,8)	Traced vocage . 12/0
7th speed 1/min: 1200	Mounting and assembly dimensions:

Designation

K mm :
KF mm : K-OT

MS mm : 0,6...1,0

XK mm : 21,8...23,8

XL mm : 11,2...14,6

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

Note inst. in remarks column

: CLM 3,9 E2 : 02.11.89 Test sheet Edition : 11.12.86 replaces Calibrating oil : ISO 4113

Injection pump : VE 4/12F1250 R226-2

: 0 460 424 024 Type number

Customer-specific information

Customer : CDC

Engine : 4 BT 390 IND.

TEST BENCH REQUIREMENTS

Calibrating oil return temp. ., C

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

pressure bar: 250...253

Perforated-plate

diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm : 0.3Prestroke

(from BDC): +0.02(0.04)

Start of delivery block Piston stroke mm: 1.8

mm: +-0.02(0.06)

Outlet : A

Injection-pump setting values Test specifications in parentheses

Timing device travel:

1/min: 900

Setting value mm: 2,0...2,4

Supply-pump pressure:

1/min: 900 Speed Setting value bar: 4,6...5,2

Full-load del. with charge press.:

Speed 1/min: 1100

Del.quantity cm3/

1000H.: 68,5...69,5

cm3/: 4,0Dispersion

1000H : (4.5)

Low-idle speed regulation:

1/min: 335 Speed

Del.quantity cm3/

1000H.: 8,0...14,0 cm3/: 5,5

Dispersion 1000H.: (7,0)

Full-load speed regulation:

1/min: 1290 Speed

Del.quantity cm3/

1000H: 58,0...64,0

Start:

Speed 1/min: 100 Del.quantity

cm3/1000H.: 70,0 mind '

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 750 1st speed

mm: 0,8...1,6 TD travel mm: (0,5...1,9)

1/min: 900 2nd speed

mm: 2,0...2,4 mm: (1,5...2,9) TD travel

1/min: 1100 3rd speed

TD travel

mm: 2,9...3,7 mm: (2,6...4,0)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2,7...3,3 1/min: 750 pressure

2nd speed

Supply-pump

bar: 3,9...4,5 1/min: 900 pressure

3rd speed

Del.quantity cm3/: 0,0...3,0 1000H.: -Supply-pullio bar: 4,6...5,2 pressure 1/min: 500 1/min: 1100 2nd speed 4th speed Del.quantity cm3/: 0,0...4,0 1000H.: -Supply-pump bar: 5,4...6,0 pressure Overflow quantity at overflow valve: Automatic starting fuel delivery: 1/min: 500 1st speed 1/min: 130 1st speed Oveflow : 41...83 Del.quantity cm3/: -1000H: 75,0 quantity cm3/10s: (26...98) ind. 1/min: 1250 2nd speed : 55...138 1/min: 300 Overflow 2nd speed Del.quantity cm3/: - max. 1000H: 80,0 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: Shutoff electromagnet: 1/min: 1450 1st special Deliquantity cm5/: 0 1000H.: -1st speed cm3/: 0.0...3.0Cut-in min. voltage : 10,0 1/min: 1400 Rated voltage : 12,0 2nd speed cm3/: 0,0...15,0 Del.quantity 1000H .: -Mounting and assembly dimensions: 3rd speed 1/min: 1360 Del.quantity cm3/: 15,0...55,0 Designation 1000H.: Κ mm 5,0...5,4 KF 1/min: 1290 mm 4th speed Del.quantity cm3/: 58,0...64,0 1000H.: (55,0...67,0) : 0,8...1,2 MS nm : 4,2 SVS max. : 18,8...20,8 1/min: 1250 5th speed XK mm / cm3/: 66,5...69,5 1000H.: (65,0...71,0) 1/min: 1100 : 11,5...14,9 Del.quantity XL mm Remarks: 6th speed Del.quantity cm3/: 68,5...69,5 1000H.: (66,0...72,0) : C.D.C. # 390 8183 1/min: 750 7th speed Del.quantity cm3/: 73,0...77,0 1000H.: (71,0...79,0) 8th speed 1/min: 500
Del.quantity cm3/: 74,0...82,0 1000H: (72,0...84,0) Zero delivery (stop): Mech. shutoff: 1/min: 1250 Speed Del.quantity cm3/: - 1000H.: 0..3 Electr. shutoff: 1/min: 335 Speed ELAB volt: -Del.quantity cm3/: 0,0...3,0 max. 1000H.: -Idle delivery: 1st speed 1/min: 335

H03

Note inst. in remarks column

: CUM 3.9 P Test sheet : 20.10.89 Edition

replaces

Calibrating oil : ISO 4113

: VE 4/12F1250 R359 Injection pump

Type number : 0 460 905 027

Customer-specific information

Customer

: CDC

Engine

: 4 BTA

TEST BENCH REQUIREMENTS

Calibrating oil return temp. .. C .

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Openina |

bar: 250...253 pressure

Perforated-plate

diameter

mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter x Wall thickness : 2 mm : 840 x Length

Start of delivery block mm: 1.25 Piston stroke

mm: +-0.02(0.06)

Outlet : A

Injection pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1100 Speed Charge press. hPa: 1000 Setting value mm: 2.0...2.4

Supply-pump pressure:

Speed 1/min: 1000 Charge press. hPa: 1000 Setting value bar: 4.9...5.5

Full-load del. with charge press.:

1/min: 850 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 83.0...84.0

cm3/: 4.0Dispersion

1000H : (4.5)

Full-load del. w/out charge press.:

 $1/\min : 500$

Del.quantity cm3/

1000H.: 53.0...54.0

Low-idle speed regulation:

Speed 1/min: 375 Charge press. hPa: -

Del.quantity cm3/

1000H.: 10.0...12.0

cm3/: 5.5 1000H.: (7.0) Dispersion

Full-load speed regulation:

1/min: 1330 Speed Charge press. hPa: 1000 Del.quantity cm3/ 1000H: 68.0...74.0

Start:

1/min: 100 Speed Charge press. hPa: -Del.quantity cm3/1000H.: 80.0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 400 1st speed Charge press. hPa: -

mm: 2.9...3.9 TD travel

mm: -

KSB solenoid-operated valve volt: -1/min: 1000 2nd speed

Charge press. hPa: 1000 mm: 1.9...1.7 mm: (0.6...2.0) TD travel

KSB solenoid-operated volt: 12 valve

H04

7 1 : 4/1 4400		
3rd speed 1/min: 1100	1	Del quantity $cm3/: 0.03.0$
	1	Del.quantity cm3/: 0.03.0 1000H.: -
Charge press. hPa: 1000	Ť	10001
TD travel mm: 2.02.4	+	3rd speed 1/min: 1430
mm: (1.52.9)	+	Charge press. hPa: 1000
KSB solenoid-operated	1	KSB solenoid-operated
	T	
valve volt: 12	+	valve volt: 12
4th speed 1/min: 1250	4	Del.guantity cm3/: 15.045.0
	1	Del.quantity cm3/: 15.045.0 1000H.: -
Charge press. hPa: 1000	T	100011
TD travel mm: 2.83.6	+	4th speed 1/min: 1330
mm: (2.53.9)	+	Charge press. hPa: 1000
KSB solenoid-operated	1	KSB solenoid-operated
NOD SUCCIDIO OPERALEGI	T	
valve volt: 12	+	valve volt: 12
	4	Del.guantity cm3/: 68.074.0
Supply pump pressure characteristic:	1	Del.quantity cm3/: 68.074.0 1000H.: (65.077.0)
outputy pulip pressure endrance iscret	1	
	+	5th speed 1/min: 1250
1st speed 1/min: 500	+	Charge press. hPa: 1000
Charge press. hPa: 1000	1	KSB solenoid-operated
Complete process. The control of	•	valve volt: 12
Supply-pump	T	
pressure bar: 2.63.2	+	Del.quantity cm3/: 76.579.5
KSB solenoid-operated	+	1000H.: (75.081.0)
	1	6th speed 1/min: 1100
	Т	
2nd speed 1/min: 1000	+	Charge press. hPa: 1000
Charge press. hPa: 1000	+	KSB solenoid-operated
Cimply—nimp	1	valve volt: 12
Supply-pump	T	\\ \text{\tinc{\tint{\text{\tint{\text{\tint{\tint{\tint{\tint{\tint{\tint{\tint{\tint{\text{\tint{\tint{\tint{\tint{\tint{\tint{\tint{\text{\tint{\text{\tint{\tint{\tint{\text{\tint{\tint{\tint{\tint{\tint{\tint{\text{\tint{\tint{\text{\tinit{\text{\text{\text{\tinit{\text{\text{\text{\tinit{\text{\tin{\tint{\text{\tinit{\tinit{\text{\tinit{\text{\tinit{\tii}\tiint{\tiin\tinit{\tinit{\tinit{\tinit{\tiinit{\tiin\tinit{\tiinit{\tiin\tinit{\ti
pressure bar: 4.95.5	+	Del.quantity cm3/: 77.580.5
KSB solenoid-operated	+	1000H.: (75.582.5)
valve volt: 12	1	7th speed 1/min: 850
	i	
3rd speed 1/min: 1250	T	Charge press. hPa: 1000
Charge press. hPa: 1000	+	KSB solenoid-operated
Supply-pump	1	valve volt: 12
paraula para 4.0 4.4	- 1	Dol guardity and/, 93 0 94 0
pressure bar: 6.06.6	T	Del.quantity cm3/: 83.084.0
	+	1000H.: (80.586.5)
Overflow quantity at overflow valve:	Ť	8th speed 1/min: 500
over teen quarterey at over teen tactor	L	Charge press. hPa: 1000
	•	ton to be case. The case to be
1st speed 1/min: 500	+	KSB solenoid-operated
	‡	KSB solenoid-operated valve volt: 12
Charge press. hPa: -	<u> </u>	KSB solenoid-operated valve volt: 12
Charge press. hPa: - KSB solenoid-operated	+++++++++++++++++++++++++++++++++++++++	KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 53.054.0
Charge press. hPa: - KSB solenoid-operated valve volt: 12	+++++++++++++++++++++++++++++++++++++++	KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 53.054.0 1000H: (49.557.5)
Charge press. hPa: - KSB solenoid-operated valve volt: 12 Oveflow : 4183	+++++	KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 53.054.0 1000H: (49.557.5)
Charge press. hPa: - KSB solenoid-operated valve volt: 12 Oveflow : 4183	+++++	KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 53.054.0 1000H: (49.557.5) 9th speed 1/min: 500
Charge press. hPa: - KSB solenoid-operated valve volt: 12 Oveflow : 4183 quantity cm3/10s: (2698)	+++++	KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 53.054.0 1000H: (49.557.5) 9th speed 1/min: 500 Charge press. hPa: -
Charge press. hPa: - KSB solenoid-operated valve volt: 12 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1250		KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 53.054.0 1000H: (49.557.5) 9th speed 1/min: 500 Charge press. hPa: - KSB solenoid-operated
Charge press. hPa: - KSB solenoid-operated valve volt: 12 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1250		KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 53.054.0 1000H: (49.557.5) 9th speed 1/min: 500 Charge press. hPa: - KSB solenoid-operated valve volt: 12
Charge press. hPa: — KSB solenoid-operated valve volt: 12 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1250 Charge press. hPa: 1000	╌╂╌╂╌┽╌╂╌╂╌╂╍╂╌╂╾╂	KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 53.054.0 1000H: (49.557.5) 9th speed 1/min: 500 Charge press. hPa: - KSB solenoid-operated valve volt: 12
Charge press. hPa: — KSB solenoid-operated Valve Volt: 12 Oveflow: 4183 quantity cm3/10s: (2698) 2nd speed: 1/min: 1250 Charge press. hPa: 1000 KSB solenoid-operated	╌╉╌╂╌╂╌╂╌╂╌╂╌╂╌╂╾╂╼╂╾	KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 53.054.0 1000H: (49.557.5) 9th speed 1/min: 500 Charge press. hPa: - KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 94.0104.0
Charge press. hPa: — KSB solenoid-operated valve volt: 12 Oveflow: 4183 quantity cm3/10s: (2698) 2nd speed: 1/min: 1250 Charge press. hPa: 1000 KSB solenoid-operated valve: volt: 12	╌╂┈╂╌╂╌╂╌╂╌╂╾╂╾╂╾╂╼╂╼┼╸	KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 53.054.0 1000H: (49.557.5) 9th speed 1/min: 500 Charge press. hPa: - KSB solenoid-operated valve volt: 12
Charge press. hPa: — KSB solenoid-operated Valve Volt: 12 Oveflow: 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1250 Charge press. hPa: 1000 KSB solenoid-operated Valve Volt: 12 Overflow: 55138	╌╀╌╂╌╂╌╂╾╂╾╂╾╂╾╂╼╂╌╀╌╀	KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 53.054.0 1000H: (49.557.5) 9th speed 1/min: 500 Charge press. hPa: - KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 94.0104.0 1000H: -
Charge press. hPa: — KSB solenoid-operated Valve Volt: 12 Oveflow: 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1250 Charge press. hPa: 1000 KSB solenoid-operated Valve Volt: 12 Overflow: 55138	╌╉╌╉╌╂╌╂╌╂╌╂╌╂╌╂╌╃╼╀╼╀╼┼╌┼	KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 53.054.0 1000H: (49.557.5) 9th speed 1/min: 500 Charge press. hPa: - KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 94.0104.0 1000H: -
Charge press. hPa: — KSB solenoid-operated valve volt: 12 Oveflow: 4183 quantity cm3/10s: (2698) 2nd speed: 1/min: 1250 Charge press. hPa: 1000 KSB solenoid-operated valve: volt: 12	╌╂╼╂╼╂╾╂╾╂╾╂╼╂╼╂╼╂╼╂╼╂╼╂╼╂	KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 53.054.0 1000H: (49.557.5) 9th speed 1/min: 500 Charge press. hPa: - KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 94.0104.0
Charge press. hPa: — KSB solenoid-operated valve volt: 12 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1250 Charge press. hPa: 1000 KSB solenoid-operated valve volt: 12 Overflow : 55138 quantity cm3/10s: (40153)	╌╂╍╂╍╂╾╂╾╂╍╂╍╂╼╂╼╂╼╂╼╂╼╂╼	KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 53.054.0 1000H: (49.557.5) 9th speed 1/min: 500 Charge press. hPa: - KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 94.0104.0 1000H: - Zero delivery (stop):
Charge press. hPa: — KSB solenoid-operated Valve Volt: 12 Oveflow: 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1250 Charge press. hPa: 1000 KSB solenoid-operated Valve Volt: 12 Overflow: 55138	╌╂╍╂╸╂╸╂╸╂╸╂╸╂╸╂╸╂╸╂╸╂╸╂╸╂╸	KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 53.054.0 1000H: (49.557.5) 9th speed 1/min: 500 Charge press. hPa: - KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 94.0104.0 1000H: -
Charge press. hPa: — KSB solenoid-operated valve volt: 12 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1250 Charge press. hPa: 1000 KSB solenoid-operated valve volt: 12 Overflow : 55138 quantity cm3/10s: (40153)	╌╉╍╂╌╂╌╂╌╂╌╂╌╂╍╂╾╂╼╂╼╂╼╂╼╂╼╂╼╂╼╂	KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 53.054.0 1000H: (49.557.5) 9th speed 1/min: 500 Charge press. hPa: - KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 94.0104.0 1000H: - Zero delivery (stop):
Charge press. hPa: — KSB solenoid-operated valve volt: 12 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1250 Charge press. hPa: 1000 KSB solenoid-operated valve volt: 12 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.:	╌╉╌╉╌╉╾╂╼╂╾╂╾╂╾╂╾╂╾╂╾╂╾╂╼╂╼╂╼╂╼╂╼╂╾╂	KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 53.054.0 1000H: (49.557.5) 9th speed 1/min: 500 Charge press. hPa: - KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 94.0104.0 1000H: - Zero delivery (stop): Mech. shutoff:
Charge press. hPa: — KSB solenoid-operated valve volt: 12 Oveflow: 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1250 Charge press. hPa: 1000 KSB solenoid-operated valve volt: 12 Overflow: 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char:: 1st speed 1/min: 700*	╌╉╼╉╾╉╾╂╾╂╼╂╼╂╼╂╼╂╼╂╼╂╼╂╼╂╼╂╾╂╼╉┈╂╼╇┈	KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 53.054.0 1000H: (49.557.5) 9th speed 1/min: 500 Charge press. hPa: - KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 94.0104.0 1000H: - Zero delivery (stop): Mech. shutoff: Speed 1/min: 1250
Charge press. hPa: — KSB solenoid-operated valve volt: 12 Oveflow: 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1250 Charge press. hPa: 1000 KSB solenoid-operated valve volt: 12 Overflow: 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char:: 1st speed 1/min: 700* Charge-air pressure-setting	╌╉╼╉╸╉╸╂╸╂╸╂╍╇╍╋╺╈╸╂╸╂╾╇╼╄╸╉╸╇╸╋╸╋╸	KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 53.054.0 1000H: (49.557.5) 9th speed 1/min: 500 Charge press. hPa: - KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 94.0104.0 1000H: - Zero delivery (stop): Mech. shutoff: Speed 1/min: 1250 Del.quantity cm3/: 03
Charge press. hPa: — KSB solenoid-operated Valve Volt: 12 Oveflow: 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1250 Charge press. hPa: 1000 KSB solenoid-operated Valve Volt: 12 Overflow: 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char:: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 535	╌╂╍╂╌╂╾╂╾╂╌╂╍╂╍╂╼╂╼╂╼╂╼╂╼╂╼╂╾╂┈╂╾╂┄╂╾	KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 53.054.0 1000H: (49.557.5) 9th speed 1/min: 500 Charge press. hPa: - KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 94.0104.0 1000H: - Zero delivery (stop): Mech. shutoff: Speed 1/min: 1250
Charge press. hPa: — KSB solenoid-operated Valve Volt: 12 Oveflow: 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1250 Charge press. hPa: 1000 KSB solenoid-operated Valve Volt: 12 Overflow: 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char:: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 535	╌╂╍╂╍╂╸╂╸╂╍╂╍╂╍╂╸╂╸╂╸╂╸╂╸╂╸╂╸╂╸╂╸╂╸╂╸	KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 53.054.0 1000H: (49.557.5) 9th speed 1/min: 500 Charge press. hPa: - KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 94.0104.0 1000H: - Zero delivery (stop): Mech. shutoff: Speed 1/min: 1250 Del.quantity cm3/: 03
Charge press. hPa: — KSB solenoid-operated valve volt: 12 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1250 Charge press. hPa: 1000 KSB solenoid-operated valve volt: 12 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 535 KSB solenoid-operated	╌╉╼╂╌╂╌╉╌╉╌╂╌╂╼╂╼╂╼╂╼╂╌╂╼╂╌╂╌╂┈╂┈╂┄╂┈╂╼╂╌╂	KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 53.054.0 1000H: (49.557.5) 9th speed 1/min: 500 Charge press. hPa: - KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 94.0104.0 1000H: - Zero delivery (stop): Mech. shutoff: Speed 1/min: 1250 Del.quantity cm3/: 03 1000H.: -
Charge press. hPa: — KSB solenoid-operated	╌╉╌╉╌╉╾╂╾╂╾╂╾╂╾╂╼╂╼╂╼╂╼╂╼╂╼╂╼╂	KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 53.054.0 1000H: (49.557.5) 9th speed 1/min: 500 Charge press. hPa: - KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 94.0104.0 1000H: - Zero delivery (stop): Mech. shutoff: Speed 1/min: 1250 Del.quantity cm3/: 03
Charge press. hPa: — KSB solenoid-operated valve volt: 12 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1250 Charge press. hPa: 1000 KSB solenoid-operated valve volt: 12 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 535 KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 71.572.5	╌╉╌╉╌╂╾╂╾╂╌╂╌╂╼╂╼╂╼╂╼╂╼╂╼╂╌╂╾╂╶╂┈╂┈╂┈╂╼╂╼╊╌╂╸╂	KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 53.054.0 1000H: (49.557.5) 9th speed 1/min: 500 Charge press. hPa: - KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 94.0104.0 1000H: - Zero delivery (stop): Mech. shutoff: Speed 1/min: 1250 Del.quantity cm3/: 03 1000H.: - Electr. shutoff:
Charge press. hPa: — KSB solenoid-operated valve volt: 12 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1250 Charge press. hPa: 1000 KSB solenoid-operated valve volt: 12 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 535 KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 71.572.5 1000H.: (68.076.0)	╌╂╌╂╌╂╌╂╌╂╌╂╌╂╌╂╌╂╌╂╼╂╼╂╌╂┈╂╌╂╌╂╌╂╌╂╌╂╌╂	KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 53.054.0 1000H: (49.557.5) 9th speed 1/min: 500 Charge press. hPa: - KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 94.0104.0 1000H: - Zero delivery (stop): Mech. shutoff: Speed 1/min: 1250 Del.quantity cm3/: 03 1000H.: -
Charge press. hPa: — KSB solenoid-operated valve volt: 12 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1250 Charge press. hPa: 1000 KSB solenoid-operated valve volt: 12 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 535 KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 71.572.5 1000H.: (68.076.0)	╌╂╍╂╌╂╌╂╌╂╌╂╌╃╌╃╼╂╼╂╼╂╾╂╼╂┈╂╼╂┈╂╸╂┈╂╌╂╼╂╼╂╼╂╼╂╼╂	KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 53.054.0 1000H: (49.557.5) 9th speed 1/min: 500 Charge press. hPa: - KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 94.0104.0 1000H: - Zero delivery (stop): Mech. shutoff: Speed 1/min: 1250 Del.quantity cm3/: 03 1000H.: - Electr. shutoff: Speed 1/min: 375
Charge press. hPa: — KSB solenoid-operated valve volt: 12 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1250 Charge press. hPa: 1000 KSB solenoid-operated valve volt: 12 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 535 KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 71.572.5 1000H.: (68.076.0) 2nd speed 1/min: 1450	╌╂╍╂╌╂╌╂╌╂╌╂╌╃╌╃╼╂╼╂╼╂╼╂╼╂╸╂┈╂┈╂┄╂┈╂┈╂┈╂┈╂┈╂┈╂	KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 53.054.0 1000H: (49.557.5) 9th speed 1/min: 500 Charge press. hPa: - KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 94.0104.0 1000H: - Zero delivery (stop): Mech. shutoff: Speed 1/min: 1250 Del.quantity cm3/: 03 1000H.: - Electr. shutoff: Speed 1/min: 375 ELAB volt: -
Charge press. hPa: — KSB solenoid-operated valve volt: 12 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1250 Charge press. hPa: 1000 KSB solenoid-operated valve volt: 12 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 535 KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 71.572.5 1000H.: (68.076.0) 2nd speed 1/min: 1450 Charge press. hPa: 1000	╌╉╌╉╌╉╌╂╾╂╾╂╌╂╌╂╌╂╌╂╌╂╌╂╌╂╌╂╾╂╴╊╾╊╌╂╌╂╼╂╌╂╾╂╼╂╾╂╾╂╾	KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 53.054.0 1000H: (49.557.5) 9th speed 1/min: 500 Charge press. hPa: - KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 94.0104.0 1000H: - Zero delivery (stop): Mech. shutoff: Speed 1/min: 1250 Del.quantity cm3/: 03 1000H.: - Electr. shutoff: Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0
Charge press. hPa: — KSB solenoid-operated valve volt: 12 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1250 Charge press. hPa: 1000 KSB solenoid-operated valve volt: 12 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 535 KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 71.572.5 1000H.: (68.076.0) 2nd speed 1/min: 1450 Charge press. hPa: 1000 KSB solenoid-operated	╌╉╌╉╌╉╾╂╾╂╾╂╾╂╾╂╼╂╼╂╼╂╼╂╼╂╼╂╼╂╼╂╾╂╼╂╼╂╼╂╼╂╼╂╼	KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 53.054.0 1000H: (49.557.5) 9th speed 1/min: 500 Charge press. hPa: - KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 94.0104.0 1000H: - Zero delivery (stop): Mech. shutoff: Speed 1/min: 1250 Del.quantity cm3/: 03 1000H.: - Electr. shutoff: Speed 1/min: 375 ELAB volt: -
Charge press. hPa: — KSB solenoid-operated valve volt: 12 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1250 Charge press. hPa: 1000 KSB solenoid-operated valve volt: 12 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 535 KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 71.572.5 1000H.: (68.076.0) 2nd speed 1/min: 1450 Charge press. hPa: 1000	╌╉╌╉╌╉╾╂╼╂╍╂╍╂╼╂╼╂╼╂╼╂╼╂╼╂╼╂╼╂┈╂╶╂╌╂╼╂╼╂╼╂╼╂╼╂╼╂╼╂╼╂╼╂╼╂	KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 53.054.0 1000H: (49.557.5) 9th speed 1/min: 500 Charge press. hPa: - KSB solenoid-operated valve volt: 12 Del.quantity cm3/: 94.0104.0 1000H: - Zero delivery (stop): Mech. shutoff: Speed 1/min: 1250 Del.quantity cm3/: 03 1000H.: - Electr. shutoff: Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0.03.0

Idle delivery:

1st speed 1/min: 375 KSB solenoid-operated valve

volt: 12 cm3/: 10.0..12.0 Del.quantity cm3/: 10.0...2.0 1000H.: (6.0...16.0)

1/min: 450 2nd speed KSB solenoid-operated volt: 12 valve

Del.quantity cm3/: 0.0...2.0 1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 100 Charge press. hPa: -KSB solenoid-operated volt: 12 valve Del.quantity cm3/: -1000H: 80.0 ind.

2nd speed 1/min: 130 Charge press. hPa: -KSB solenoid-operated volt: 12 valve Del.quantity cm3/: -1000H: 80.0 max.

Shutoff electromagnet:

Cut-in

min. voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

: 3.6...3.8 K KF : K-OT MS mm : 0.8...1.2SVS max. : 2.1 mm

Remarks:

: c.D.C. # 391 7535

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

Note inst. in remarks column

: CAS 3,9 N : 07.11.89 Test sheet Edition

replaces

: ISO 4113 Calibrating oil

Injection pump : VE 4 12F1100 R370

: 0 460 424 056 Type number

Customer specific information

Customer : CASE

: 4 BT Engine

TEST BENCH REQUIREMENTS

Calibrating-oil

return temp. , C . with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

bar: 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 450 x Length

Start of delivery

mm : 0,3Prestroke

(from BDC): $\leftarrow 0.02(0.04)$

Start of delivery block mm: 1,55 Piston stroke

mm: +0,02(0,06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750

Setting value mm: 3,2...3,6

Supply-pump pressure:

1/min: 750 Setting value bar: 4,3...4,9

Full-load del. w/out charge press.:

1/min: 750 Speed

Del.quantity cm3/

1000H.: 85,5...86,5 cm3/: 4,0_

Dispersion

1000H.: (4,5)

Low-idle speed regulation:

1/min: 450 Speed

Del.quantity cm3/ 1000H.: 10,0...16,0 Dispersion cm3/: 5,5 1000H.: (7,0)

Full-load speed regulation:

1/min: 1160 Speed

Del.quantity cm3/ 1000H: 44,5...50,5

Start:

1/min: 100 Speed Del.quantity

mind cm3/1000H.: 60,0

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 500 1st speed

mm: 1,7...2,5 TD travel mm: (1,4...2,8)

1/min: 750 2nd speed

TD travel

mm: 3,2...3,6 mm: (2,7...4,1) 1/min: 1100 3rd speed

mm: 4,7...5,5 mm: (4,4...5,8) TD travel

Supply-pump pressure characteristic:

1st speed 1/min: 500

Supply-pump

bar: 3,3...3,9 1/min: 750 pressure

2nd speed Supply-pump

bar: 4,3...4,9 1/min: 1100 pressure

3rd speed

Supply-pump bar: 5,9...6,5 pressure Overflow quantity at overflow valve: 1st speed 1/min: 500 : 41...83 Oveflow cm3/10s: (26...98) quantity 1/min: 1100 2nd speed : 55..,138 Overflow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char .: 1/min: 1200 1st speed Del.quantity cm3/: 0,0...3,0 1000H.: -1/min: 1180 cm3/: 15,0...55,0 2nd speed 2nd special Del.quantity cms/: 1000H.: -1/min: 1160 3rd speed Del.quantity cm3/: 44,5...50,5 1000H.: (41,5...53,5) 1/min: 1100 4th speed Del.quantity cm3/: 68,0...71,0 1000H.: (66,5...72,5) 5th speed 1/min: 900 Del.quantity cm3/: 74,5...79,5 10004.: (73,0...81,0) 6th speed 1/min: 750 Del.quantity cm3/: 85,5...00,5 1000H.: (83,0...89,0) 7th speed 1/min: 500 Del.quantity cm3/: 85,0...93,0 1000H.: -Zero delivery (stop): Mech. shutoff: 1/min: 1100 Speed Del.quantity cm3/: 0..3 1000H .: -Electr. shutoff: 1/min: 450 Speed FLAB volt: -Del.quantity cm3/: 0,0...3,0 max. 1000H.: -Idle delivery: 1st speed 1/min: 450 Del.quantity cm3/: 10,0..16,0 1000H.: (8,0...18,0) 1/min: 480 2nd speed Del.quantity cm3/: 0,0...4,0 1000H.: -

Automatic starting fuel delivery: 1st speed 1/min: 250 Del.quantity cm3/: -ind. 1000H: 80,0 1/min: 400 2nd speed Del.quantity cm3/: -max. 1000H: 120,0 Shutoff electromagnet: Cut-in : 10,0 min. voltage Rated voltage : 12,0 Mounting and assembly dimensions: Designation K mm : 5,0...5,4 : 0,8...1,2 KF mm MS mm SVS max. : 1,1 : 18,8...20,8 XΚ mm XL mm : 11,0...14,4 Remarks:

Note inst. in remarks column

: CUM 3.9 N20 Test sheet : 24.10.89 Edition

replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/12F1150 R378 : 0 460 424 058 Type number

Customer-specific information

Customer

: CDC

: 4 BT - 3.9 IND.Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. __C

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

bar: 250...253 pressure

Perforated plate

diameter mm:0.5

Test ini. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm : 0.3Prestroke

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1.8

mm: +-0.02(0.06)

Outlet : A

Injection pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 900 Speed

Setting value mm: 2.0...2.4

Supply-pump pressure:

1/min: 900 Speed Setting value bar: 4.2...4.8

Full-load del. w/out charge press.:

1/min: 900 Speed

Del.quantity cm3/

1000H.: 67.0...68.0

cm3/: 4.0Dispersion

1000H.: (4.5)

Low-idle speed regulation:

1/min: 375 Speed

Deliquantity cm3/

1000H.: 8.0...14.0 cm3/: 5.5

Dispersion 1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1190

Del.quantity cm3/ 1000H: 47.0...53.0

Start:

Speed 1/min: 100 Del.quantity

cm3/1000H.: 70.0 mind

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 750 1st speed

TD travel mm: 0.8...1.6 mm: (0.5...1.9)

1/min: 900 2nd speed

TD travel

mm: 2.0...2.4 mm: (1.5...2.9)

1/min: 1150 3rd speed

mm: 3.2...4.0 TD travel

mm: (2.9...4.3)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2.5...3.1 pressure

bar: (2.3...3.3)

1/min: 900 2nd speed

Supply-pump

bar: 4.2...4.8 pressure

bar: (4.0...5.0)

1/min: 1150 3rd speed Supply-pump bar: 5.2...5.8 pressure bar: (5.0...6.0) Overflow quantity at overflow valve: 1/min: 500 1st speed Oveflow : 41...83 cm3/10s: (26...98) quantity 1/min: 1150 2nd speed : 55...138 Overflow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1/min: 1300 1st speed cm3/: 0.0...3.0 Del.quantity 1000H.: (0.0...3.0) 1/min: 1220 2nd speed Del.quantity cm3/: 15.0...55.0 1000H.: (15.0...55.0) 1/min: 1190 3rd speed Del.quantity cm3/: 47.0...53.0 1000H.: (44.0...56.0) 1/min: 1150 4th speed Del.quantity cm3/: 63.5...66.5 1000H.: (62.0....68.0) 1/min: 900 5th speed Del.quantity cm3/: 67.0...68.0 1000H.: (64.5...70.5) 1/min: 750 6th speed cm3/: 69.5...73.5 Del.quantity 1000H.: (67.5...77.5) 1/min: 500 7th speed Del.quantity cm3/: 68.0...76.0 1000H.: (66.0...78.0) Zero delivery (stop): Mech. shutoff: Speed 1/min: 1150 Del.quantity cm3/: 0..3 1000H .: -Electr. shutoff: Speed 1/min: 375 volt: -ELAB. Del.quantity cm3/: 0.0...3.0 1000H.: max. Idle delivery: 1/min: 375 1st speed Del.quantity cm3/: 8.0...14.0 1000H.: (6.0...16.0)

1/min: 500

Del.quantity cm3/: 0.0...4.0 1000H.: (0.0...4.0) Automatic starting fuel delivery: 1st speed 1/min: 130 Del.quantity cm3/: -1000H: 80.0 ind. 2nd speed 1/min: 240 Del.quantity cm3/: -max. 1000H : 80.0 Mounting and assembly dimensions: Designation Κ mm KF : 5.0...5.4 mm : 1.1...1.5 MS mm SVS max. mm : 4.0 Remarks: : C.D.C. # 391 7507

2nd speed

Note inst. in remarks column

: CUM 3.9 N21 Test sheet Edition : 24.10.89

replaces

Calibrating oil : ISO 4113

: VE 4/12F1250 R378-2 Injection pump

: 0 460 424 060 Type number

Customer-specific information

Customer : CDC

: 4 BT - 3.9 IND.Engine

k: 73 Power 1/mi: 2500 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. , C

with thermometer : 40...48

electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening.

bar: 250...253 pressure

Perforated plate

mm : 0.5diameter

Test inj. tubing : 1 680 750 017

Outside diameter x Wall thickness : 2 mm: 840 x Lenath

Start of delivery

mm : 0.3Prestroke

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1.8

mm: +-0.02(0.06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 900 mm: 2.0...2.4 Speed Setting value

Supply-pump pressure:

1/min: 900 Setting value bar: 4.6...5.2

Full-load del. w/out charge press.:

1/min: 1100 Speed

Del.quantity cm3/ 1000H.: 68.5...69.5

cm3/: 4.0 Dispersion

1000H.: (4.5)

Low-idle speed regulation:

1/min: 335 Speed

Del.quantity cm3/

1000H.: 8.0...14.0

cm3/: 5.0Dispersion

1000H.: (7.0)

Full-load speed regulation:

1/min: 1290 Speed

Del.quantity cm3/

1000H: 58.0...64.0

Start:

1/min: 100 Speed Del.quantity

mind cm3/1000H.: 70.0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 750 1st speed

mm: 0.8...1.6 mm: (0.5...1.9) TD travel

1/min: 900 2nd speed

TD travel

mm: 2.0...2.4 mm: (1.5...2.9)

1/min: 1100 3rd speed

mm: 2.9...3.7 mm: (2.6...4.0) TO travel

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2.7...3.3 bar: (2.5...3.5) 1/min: 750 pressure

2nd speed

Supply-pump bar: 3.9...4.5 bar: (3.7...4.7) pressure 3rd speed 1/min: 900 Supply-pump bar: 4.6...5.2 pressure bar: (4.4...5.4) 1/min: 1100 4th speed Supply-pump bar: 5.4...6.0 pressure bar: (5.2...6.2) Overflow quantity at overflow valve: 1st speed 1/min: 500 Oveflow : 41...83 cm3/10s: (26...98) duantity 1/min: 1250 2nd speed : 55...138 Overflow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1st speed 1/min: 1450 Del.quantity cm3/: 0.0...3.0 1000H.: (0.0...3.0)
2nd speed 1/min: 1360
Del.quantity cm3/: 15.0...55.0
1000H.: (15.0...55.0) 1/min: 1290 3rd speed Del.quantity cm3/: 58.0...64.0 1000H.: (55.0...67.0) 4th speed 1/min: 1250 Del.quantity cm3/: 66.5...69.5 1000H.: (65.0...71.0) 5th speed 1/min: 1100 Del.quantity cm3/: 68.5...69.5 1000H.: (66.0...72.0) 6th speed 1/min: 750 Del.quantity cm3/: 73.0...77.0 1000H.: (71.0...79.0) 7th speed 1/min: 500
Del.quantity cm3/: 74.0...82.0
1000H.: (72.0...84.0) Zero delivery (stop): Mech. shutoff: 1/min: 1250 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: Speed 1/min: 335 ELAB volt: -Del.quantity cm3/: 0.0...3.0 max. 1000H.: -

Idle delivery: 1st speed 1/min: 335 Del.quantity cm3/: 8.0...14.0 1000H.: (6.0...16.0) 1/min: 500 2nd speed Del.quantity cm3/: 0.0...4.0 1000H.: (0.0...4.0) Automatic starting fuel delivery: 1/min: 130 1st speed Del.quantity cm3/: -1000H: 75.0 ind. 1/min: 300 2nd speed Del.quantity cm3/: -max. 1000H : 80.0 Shutoff electromagnet: Cut-in : 10.0 min. voltage Rated voltage : 12.0 Mounting and assembly dimensions: Designation K mm : 5.0...5.4 KF mm MS : 0.8...1.2 mm

mm

Remarks:

SVS max.

: C.D.C. # 391 7510

Note inst. in remarks column

: CUM 3.9 N22 Test sheet Edition : 24.10.89

replaces

Calibrating oil : ISO 4113

: VE 4/12F1050 R378-3 : 0 460 424 061 Injection pump

Type number

Customer-specific information

Customer : CDC

Engine : 4 BT - 390 IND.

TEST BENCH REQUIREMENTS

Calibrating-oil

return temp. _,C . with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Openina

bar: 250...253 pressure

Perforated-plate

mm : 0.5diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm : 840 x Length

Start of delivery

mm: 0.3Prestroke

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1.8

mm: +-0.02(0.06)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900 Setting value mm: 2.3...2.7

Supply-pump pressure:

1/min: 900 Setting value bar: 4.1...4.7

Full-load del. w/out charge press.:

1/min: 900 Speed

Del.quantity cm3/ 1000H.: 69.0...70.0

cm3/: 4.0 Dispersion

1000H.: (4.5)

Low-idle speed regulation:

1/min: 375

Speed 1/31/1. 2000 Del.quantity cm3/ 1000H.: 10.0...11.0 Dispersion cm3/: 5.5 1000H.: (7.0)

Full-load speed regulation:

1/min: 1110 Speed

Del.quantity cm3/ 1000H: 49.0...55.0

Start:

1/min: 100 Speed Del.quantity

mind cm3/1000H.: 70.0

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750

TD travel mm: 1.3...2.1 mm: (1.0...2.4)

1/min: 900 2nd speed

TD travel mm: 2.3...2.7 mm: (1.8...3.2)

3rd speed

1/min: 1050 mm: 2.8...3.6 TD travel mm: (2.5...3.9)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: (2.1...3.1) pressure

1/min: 900 2nd speed

Supply-pump

bar: 4.1...4.7 pressure

bar: (3.9...4.9)

1/min: 1050 3rd speed

bar: 4.8...5.4 Automatic starting fuel delivery: pressure bar: (4.6...5.6) 1/min: 130 1st speed Del.quantity cm3/: -Overflow quantity at overflow valve: 1000H: 80.0 ind. 1/min: 500 1st speed Oveflow : 41...83 2nd speed 1/min: 240 cm3/10s: (26...98) Del.quantity cm3/: quantity 1000H: 80.0 1/min: 1050 2nd speed : 55...138 Overflow quantity cm3/10s: (40...153) Shutoff electromagnet: Delivery-quant. and breakaway char.: Cut-in : 10.0 min. voltage Rated voltage : 12.0 1/min: 1200 1st speed Del.quantity cm3/: 0.0...3.0 1000H.: (0.0...3.0) Mounting and assembly dimensions: 2nd speed 1/min: 1140 Del.quantity cm3/: 15.0...55.0 1000H.: (15.0...55.0) Designation K mm : 5.0...5.4 1/min: 1110 KF 3rd speed mm Del.quantity cm3/: 49.0...55.0 1000H.: (46.0...58.0) : 1.1...1.5 MS mm SVS max. mm 4th speed 1/min: 1050
Del.quantity cm3/: 66.0...69.0
1000H.: (64.5...70.5) Remarks: : C.D.C. # 391 7035 5th speed 1/min: 900 Del.quantity cm3/: 69.0...70.0 1000H.: (66.5...72.5) 1/min: 750 6th speed Del.quantity cm3/: 72.0...76.0 1000H.: (70.0...78.0) 1/min: 500 7th speed Del.quantity cm3/: 72.0...80.0 1000H.: (70.0...82.0) Zero delivery (stop): Mech. shutoff: 1/min: 1050 Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 375 Speed ELAB volt: -Del.quantity cm3/: 0.0...3.0 max. 1000H.: -Idle delivery: 1/min: 375 1st speed Del.quantity cm3/: 10...12 1000H.: (6.0...16.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.0...4.0 1000H.: (0.0...4.0)

Supply-pump

Note inst. in remarks column

: CUM 3.9 N23 Test sheet : 25.10.89 Edition

replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/12F1100 R378-4

: 0 460 424 062 Type number

Customer-specific information

Customer : CDC

Engine : 4 BT - 3.9 TND.

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. ... C .

with thermometer: 40...48 : 42...50 electronically

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250...253 pressure

Perforated-plate

mm:0.5diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke mm : 0.3

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1.8

mm: +0.02(0.06)

Outlet : A

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 900

Setting value mm: 2.3...2.7

Supply-pump pressure:

1/min: 900 Speed Setting value bar: 4.1...4.7

Full-load del. w/out charge press.:

1/min : 900 Speed

Del.quantity cm3/ 1000H.: 67.5...68.5

cm3/: 4.0 Dispersion

1000H.: (4.5)

Low-idle speed regulation:

Speed 1/min: 335

Del.quantity cm3/ 1000H.: 8.0...14.0

cm3/: 5.5 Dispersion 1000H.: (7.0)

Full-load speed regulation:

1/min: 1150 Speed

Del.quantity cm3/

1000H: 53.0...59.0

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 70.0 mind `

Inspection-pump test specifications

Test specifications in parentheses

Timing-device characteristic:

1/min: 750 1st speed

mm: 1.3...2.1 TD travel mm: (1.0...2.4)

2nd speed 1/min: 900

TD travel mm: 2.3...2.7

mm: (1.8...3.2)

1/min: 1100 3rd speed

mm: 3.1...3.9 mm: (2.8...4.2) TD travel

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

pressure

bar: 2.3...2.9 bar: (2.1...3.1)

1/min: 900 2nd speed

Supply-pump

bar: 4.1...4.7 pressure

bar: (3.9...4.9)

3rd speed 1/min: 1100 Supply-pump bar: 4.9...5.5 bar: (4.7...5.7) pressure Overflow quantity at overflow valve: 1/min: 500 1st speed : 41...83 Oveflow cm3/10s: (26...98) quantity 1/min: 1100 2nd speed : 55...138 Overflow | quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1/min: 1250 1st speed Deliquantity cm3/: 0.0...3.0 1000H.: (0.0...3.0) 1/min: 1180 2nd speed Del.quantity cm3/: 13.0...55.0) 3rd speed 1/min: 1150 Del.quantity cm3/: 53.0...59.0 1000H.: (50.0...56.0) 1/min: 1100 4th speed 1/min: 900 5th speed 1/min: 750 6th speed 1/min: 500 7th speed Del.quantity cm3/: 69.0...77.0 1000H.: (67.0...79.0) Zero delivery (stop): Mech. shutoff: 1/min: 1100 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 335 Speed volt: -ELAB Del.quantity cm3/: 0.0...3.0 1000H.: -Idle delivery: 1000H.: (6.0...16.0)

1/min: 500

Del.quantity cm3/: 0.0...4.0 1000H.: (0.0...4.0) Automatic starting fuel delivery: 1st speed 1/min: 130 Del.quantity cm3/: ind. 1000H: 80.0 2nd speed 1/min: 240 Del.quantity cm3/: max. 1000H: 80.0

Shutoff electromagnet:

Cut-in min. voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm : KF mm : 5.0...5.4
MS mm : 1.1...1.5
SVS max. mm : 3.2

Remarks:

: C.D.C. # 391 6929

2nd speed

Note inst. in remarks column

: CUM 5,9 P1 Test sheet : 02.11.89 : 16.10.86 Edition replaces Calibrating oil : ISO 4113

: VE 6/12F1250 R159-16 Injection pump : 0 460 426 066

Type number

Customer-specific information

Customer : CDC

Engine : 6BT-5.9 IND.

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. , C .

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

mm : 0.3Prestroke

(from BDC): +0.02(0.04)

Start of delivery block Piston stroke mm: 1,3

mm: +0,02(0,06)

: D Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750 Setting value mm: 3,4...3,8

Supply-pump pressure:

1/min: 750 Speed Setting value bar: 3,3...4,3

Full-load del. with charge press.:

1/min: 1100 Speed

Del.quantity cm3/ 1000H.: 73,0...74,0

cm3/:4,0Dispersion 1000H : (4,5)

Low-idle speed regulation:

1/min: 360 Speed Del.quantity cm3/ 1000H.: 7,0...15,0

cm3/: 5,5 Dispersion 1000H.: (7,0)

Full-load speed regulation:

1/min: 1300

Deliquantity cm3/

1000H: 51,00...57,0

Start:

Speed 1/min: 100 Del.quantity cm3/1000H.: 60,0 mind

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500

mm: 1,5...2,3 mm: (1,2...2,6) 1/min: 750 TD travel

2nd speed

TD travel

mm: 3,4...3,8 mm: (2,9...4,3)

1/min: 1100 3rd speed

mm: 5,2...6,0 mm: (4,9...6,3) TD travel

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2,2...3,2 1/min: 750 pressure

2nd speed

Supply-pump

bar: 3,3...4,3 1/min: 1100 pressure

3rd speed

Supply-pump bar: 4,6...5,6 pressure Overflow quantity at overflow valve: 1/min: 500 1st speed : 41...83 Oveflow cm3/10s: (26...98) quantity 1/min: 1250 2nd speed Overflow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1/min: 1400 1st speed cm3/: 0.0...3.0Del.quantity 1000H.: -1/min: 1390 2nd speed Del.quantity cms/.
1000H.: cm3/: 0.0...15.01/min: 1350 cm3/: 15,0...55,0 3rd speed Del.quantity cm3/: 7 1000H.: -4th speed 1/min: 1300 1/min: 1250 5th speed Del.quantity cm3/: (0,0....) 1000H.: (68,5...74,5) 6th speed 1/min: 1100 cm3/: 73,0...74,0 Del.quantity 1000H.: (70,5....76,5) 1/min: 900 7th speed Del.quantity cm3/: 74,5...78,5 1000H.: 8th speed 1/min: 750 Del.quantity cm3/: 76,0...80,0 1000H: (74,0...82,0) 1/min: 500 9th speed Del.quantity cm3/: 64,0...72,01000H: (62,0...74,0) Zero delivery (stop): Mech. shutoff: 1/min: 1250 Speed Del.quantity cm3/: -1000H.: 0..3 Electr. shutoff: Speed 1/min: 360 ELAB volt: -Del.quantity cm3/: 0,0...3,0 max. 1000H.: -Idle delivery: 1/min: 360 1st speed

H18

Del.quantity cm3/: 7,0...15,0 1000H.: (6,0...16,0) 1/min: 450 2nd speed Del.quantity cm3/: 0,0...4,0 1000H.: -Automatic starting fuel delivery: 1/min: 130 1st speed Del.quantity cm3/: -1000H: 70,0 ind. 1/min: 240 2nd speed Del.quantity cm3/: -max. 1000H: 70,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation K mm KF 5,0...5,4 mm MS : 0,6...1,0 mm : 0,9 SVS max. mm : 18,8...20,8 XK mm XL : 11,8...15,2 mm Remarks: : C.D.C. # 390 8198

Note inst. in remarks column

: CUM 5,9 P3 Test sheet : 02.11.89 Edition

replaces

Calibrating oil : ISO 4113

: VE 6/12F1250 R159-16 Injection pump

Type number : 0 460 426 066 Customer Part-No. : 3 916 114

Customer-specific information

Customer : CDC

Engine : 6BT-5.9 IND.

TEST BENCH REQUIREMENTS

Calibrating-oil

return temp. , C . with thermometer : 40...48 electronically

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

pressure bar: 250...253

Perforated plate

diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke

e mm: 0,3 (from BDC): +0,02(0,04)

Start of delivery block Piston stroke

mm: 1,3 mm: +0,02(0,06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750 Speed

H19

Setting value mm: 3,4...3,8

Supply-pump pressure:

1/min: 750

Setting value bar: 3,3...4,3

Full-load del. with charge press.:

Speed 1/min: 1100

Del.quantity cm3/ 1000H: 73,0...74,0 Dispersion cm3/: 4,0

1000H : (4.5)

Low-idle speed regulation:

Speed 1/min: 360

Del.quantity cm3/ 1000H.: 7,0...15,0 Dispersion cm3/: 5,5 1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1300

Del.quantity cm3/

1000H: 51,00...57,0

Start:

1/min: 100 Speed Del.quantity

mind cm3/1000H.: 60,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500

mm: 1,5...2,3 mm: (1,2...2,6) TD travel

1/min: 750 2nd speed

mm: 3,4...3,8 mm: (2,9...4,3) 1/min: 1100 TD travel

3rd speed

mm: 5,2...6,0 mm: (4,9...6,3) TD travel

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2,2...3,2 1/min: 750 pressure

2nd speed

Supply-pump

bar: 3,3...4,3 1/min: 1100 pressure

3rd speed

Del.quantity cm3/: 7,0...15,0 1000H.: (6,0...16,0) Supply-pump bar: 4,6...5,6 pressure 1/min: 450 2nd speed Del.quantity cm3/: 0,0...4,0 1000H.: -Overflow quantity at overflow valve: 1st speed 1/min: 500 : 41...83 Automatic starting fuel delivery: Oveflow cm3/10s: (26...98) quantity 1/min: 130 1/min: 1250 1st speed 2nd speed : 55...138 Del.quantity cm3/: -Overflow cm3/10s: (40...153) 1000H: 70,0 ind. quantity Delivery-quant. and breakaway char .: 2nd speed 1/min: 240 Del.quantity cm3/: -1000H: 70,0 1/min: 1400 1st speed cm3/: 0,0...3,0Del.quantity 1000H .: -Shutoff electromagnet: 2nd speed 1/min: 1390 cm3/: 0,0...15,0 Del.quantity Cut-in 1000H.: min. voltage : 20,0 1/min: 1350 : 24,0 3rd spect Del.quantity cms/. 1000H.: 3rd speed Rated voltage cm3/: 15,0...55,0 Mounting and assembly dimensions: 1/min: 1300 4th speed cm3/: 51,0...57,0 Del.quantity Designation 1000H.: (48,0...60,0) K mm KF : 5,0...5,4 1/min: 1250 5th speed mm cm3/: 70,0...73,0 MS : 0,6...1,0 Del.quantity mm 1000H.: (68,5...74,5) SVS max. : 0,9 mm 1/min: 1100 cm3/: 73,0...74₂0 18,8...20,8 6th speed XK mm : 11,8...15,2 XL Del.quantity mm 1000H.: (70,5....76,5) 1/min: 900 7th speed Remarks: 7th specific cms/... 1000H.: cm3/: 74,5...78,5 1/min: 750 cm3/: 76,0...80,0 8th speed Del.quantity 1000H: (74,0...82,0) 1/min: 500 9th speed Del.quantity cm3/: 64,0...72,0 1000H: (62,0...74,0) Zero delivery (stop): Mech. shutoff: Speed 1/min: 1250 Del.quantity cm3/: -1000H.: 0..3 Electr. shutoff: 1/min: 360 Speed ELAB volt: -Del.quantity cm3/: 0,0...3,0 1000H .: -Idle delivery: 1/min: 360 1st speed

H20

Note inst. in remarks column

: PER 6,0 C Test sheet Edition : 06.11.89 : 03.02.89 replaces Calibrating oil : ISO 4113

Injection pump : VE 6/12F1300 R240 Type number : 0 460 426 084

Customer-specific information : PERKINS Customer

: T6 60 CC TRU Engine

TEST BENCH REQUIREMENTS

Calibrating-oil

return temp. ., C . with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 020

Openina .

pressure bar: 172...175

Perforated plate

diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm:840x Length

Start of delivery

mm: 0.25 Prestroke

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1.0 mm: +-0.02

Outlet : A

Injection pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100 Charge press. hPa: 1000

Setting value mm: 1.3...1.7

Supply-pump pressure:

1/min: 1100 Speed Charge press. hPa: 1000 Setting value bar: 6.5...7.1

Full-load del. with charge press.:

1/min: 700 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 99.0...100.0

cm3/:5.0Dispersion 1000H : -

Full-load del. w/out charge press.:

1/min : 700 Speed

Del.quantity cm3/

1000H.: 87.0...88.0

Low-idle speed regulation:

Speed 1/min: 300 Charge press. hPa: -Del.quantity cm3/ 1000H.: 16.5...20.5

Dispersion cm3/: 5.01000H.: -

Full-load speed regulation:

Speed 1/min: 1450 Charge press. hPa: 1000

Del.quantity cm3/

1000H: 47.0...53.0

Start:

1/min: 100 Speed Charge press. hPa: -Del.quantity mind cm3/1000H.: 120.0

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000 Charge press. hPa: 1000

TD travel mm: 0.3...1.1

mm: (0.0...1.4)

1/min: 1100 2nd speed Charge press. hPa: 1000 mm: 1.3...1.7 TD travel

mm: (0.8...2.2)

Charge press. hPa: 1000 TD travel mm: 2.02.8 mm: (1.73.1)	Del.quantity cm3/: 99.0100.0 1000H.: (96.5102.5) 8th speed 1/min: 700
Supply-pump pressure characteristic:	Charge press. hPa: - Del.quantity cm3/: 87.088.0 1000H: (84.590.5)
1st speed 1/min: 500 Charge press. hPa: 1000 Supply-pump pressure bar: 3.94.5 2nd speed 1/min: 1100	9th speed 1/min: 500 Charge press. hPa: - Del.quantity cm3/: 80.083.0 1000H: (78.584.5)
Charge press. hPa: 1000 + Supply-pump +	Zero delivery (stop):
pressure bar: 6.57.1 3rd speed 1/min: 1300 Charge press. hPa: 1000	Mech. shutoff: Speed 1/min: 1300
Supply-pump pressure bar: 7.37.9	Del.quantity cm3/: 03 1000H.: -
Overflow quantity at overflow valve:	Electr. shutoff:
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1300	Speed 1/min: 300 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: -
Charge press. hPa: 1000 Overflow: 55138	Idle delivery:
quantity cm3/10s: (40153) Delivery-quant. and breakaway char.:	1st speed
1st speed 1/min: 700 Charge-air pressure-setting point hPa: 400	2nd speed
LDA stroke mm: 6.3 Del.quantity cm3/: 95.096.0 1000H.: (92.598.5)	Del.quantity cm3/: 0.02.6 1000H.: -
2nd speed 1/min: 1550 Charge press. hPa: 1000 Del.quantity cm3/: 0.07.0	Automatic starting fuel delivery: 1st speed 1/min: 150
1000H.: - 3rd speed 1/min: 1500 - Charge press. hPa: 1000 - Del.quantity cm3/: 13.521.5 -	Charge press. hPa: - Del.quantity cm3/: - ind. 1000H: 95.0
1000H.: (10.524.5) 4th speed 1/min: 1450 Charge press. hPa: 1000 Del.quantity cm3/: 47.053.0	2nd speed 1/min: 230 Charge press. hPa: — Del.quantity cm3/: — max. 1000H: 85.0
1000H.: (44.056.0) + 5th speed 1/min: 1300 + Charge press. hPa: 1000 +	Shutoff electromagnet:
Del.quantity cm3/: 95.098.0 1000H.: (93.599.5) 6th speed 1/min: 1000	Cut-in min. voltage : 20.0 Rated voltage : 24.0
Charge press. hPa: 1000 + Del.quantity cm3/: 99.5102.5 + 10004 (08.0 10/.0)	Mounting and assembly dimensions:
1000H.: (98.0104.0) + 7th speed 1/min: 700 +	Designation

K mm : KF mm : K-OT
MS mm : 0.6...1.0
SVS max. mm : 3.2
XK mm : 17.0...19.0
XL mm : 12.8...16.2

Remarks:

Note inst. in remarks column

: PER 6.0 C2 Test sheet

Compl. date:

: 06.11.89 **Fdition** : 03.02.89 replaces : ISO 4113 Calibrating oil

: VE 6/12F1300 R240-2 Injection pump

Type number : 0 460 426 094

Customer-specific information Customer : PERKINS

Engine : T6 60 CC TRU

TEST BENCH REQUIREMENTS

Calibrating oil

return temp. .,C. with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 020 assembly

Opening

bar: 172...175 pressure

Perforated plate

diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

mm: 0.25 Prestroke

(from BDC): +0.02(0.04)

Start of delivery block Piston stroke mm: 1.0 mm: +-0.02

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1100 Speed

Charge press. hPa: 1000 Setting value mm: 1.3...1.7

Supply-pump pressure:

Speed 1/min: 1100 Charge press. hPa: 1000 Setting value bar: 6.5...7.1

Full-load del. with charge press.:

Speed 1/min: 700 Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 99.0...100.0

cm3/:5.0Dispersion 1000H : -

Full-load del. w/out charge press.:

Speed $1/\min : 700$ Del.quantity cm3/

1000H.: 87.0...88.0

Low-idle speed regulation:

1/min: 300 Speed Charge press. hPa: -Del.quantity cm3/ 1000H.: 16.5...20.5

cm3/: 5.0 Dispersion 1000H.: -

Full-load speed regulation:

1/min: 1450 Speed Charge press. hPa: 1000 Del.quantity cm3/ 1000H: 47.0...53.0

Start:

Speed 1/min: 100 Charge press. hPa: -Del.quantity cm3/1000H.: 120.0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing device characteristic:

1/min: 1000 1st speed Charge press. hPa: 1000 mm: 0.4...1.2 TD travel

mm: (0.1...1.5)

2nd speed 1/min: 1100 Charge press. hPa: 1000

TD travel mm: 1.31.7	+ Del.quantity cm3/: 99.5102.5
mm: (0.82.2)	1000H.: (98.0104.0)
3rd speed 1/min: 1300	+ 7th speed 1/min: 700
Charge press. hPa: 1000	+ Charge press. hPa: 1000
TD travel mm: 2.02.8	+ Del.quantity cm3/: 99.0100.0
mm: (1.73.1)	1000H.: (96.5102.5)
	+ 8th speed 1/min: 700
Supply-pump pressure characteristic:	+ Charge press. hPa: -
	+ Del.quantity cm3/: 87.088.0
1st speed 1/min: 500	1000H: (84.590.5)
Charge press. hPa: 1000	+ 9th speed 1/min: 500
Supply-pump	+ Charge press. hPa: -
pressure har: 39 45	Del.quantity cm3/: 80.083.0
pressure bar: 3.94.5 2nd speed 1/min: 1100	1000H: (78.584.5)
Charge press. hPa: 1000	1
Cimply-nimp	Zero delivery (stop):
Supply-pump	T Zero decivery (Stop).
pressure bar: 6.57.1	T is all all water.
3rd speed 1/min: 1300	† Mech. shutoff:
Charge press. hPa: 1000	† 44 : 4700
Supply-pump	+ Speed 1/min: 1300
pressure bar: 7.37.9	+ Deliquantity cm3/: 03
	+ 1000H.: -
Overflow quantity at overflow valve:	}
·	+ Idle delivery:
1st speed 1/min: 500	-
Charge press. hPa: -	1st speed 1/min: 300
Oveflow : 4183	Del.quantity cm3/: 16.520.5
quantity cm3/10s: (2698)	1000H.: (13.523.5)
2nd speed 1/min: 1300	2nd speed 1/min: 350
Charge press. hPa: 1000	Del.quantity cm3/: 4.510.5
Charge press. Hrd. 1000	1000H.: (2.512.5)
Overflow : 55138	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
quantity cm3/10s: (40153)	3rd speed 1/min: 400
	Del.quantity cm3/: 0.02.6
Delivery-quant. and breakaway char.:	1000H.: -
4	
1st speed 1/min: 700	Automatic starting fuel delivery:
Charge-air pressure-setting	†
point hPa: 400	1st speed
LDA stroke mm: 6.3	Charge press. hPa: -
Del.quantity cm3/: 95.096.0	Del.quantity cm3/: -
1000H.: (92.598.5)	+ ind. 1000H: 95.0
2nd speed 1/min: 1550] -
Charge press. hPa: 1000	+ 2nd speed 1/min: 230
Del.quantity cm3/: 0.07.0	+ Charge press. hPa: -
1000н.: -	Del.quantity cm3/: -
3rd speed 1/min: 1500	max. 1000H : 85.0
Charge press. hPa: 1000	
Del.quantity cm3/: 13.521.5	Shutoff electromagnet:
1000H.: (10.524.5)	1 Strate is executed straighter.
4th speed 1/min: 1450	- Cut-in
Charge press. hPa: 1000	min. voltage :-
Del.quantity cm3/: 47.053.0	Rated voltage : -
1000H.: (44.056.0)	Manushina and accomply discussions
5th speed 1/min: 1300	Mounting and assembly dimensions:
Charge press. hPa: 1000	†
Del.quantity cm3/: 95.098.0	Designation
1000H.: (93.599.5)	+ K mm : -
6th speed	+ KF mm : K-OT
Charge press. hPa: 1000	MS mm : 0.61.0
•	SVS max. mm : -

XK mm : 17.0...19.0 XL mm : 12.8...16.2

Remarks:

Note inst. in remarks column

Test sheet : MAN 7,2 T : 06.11.89 Edition

replaces : ISO 4113 Calibrating oil

: VE 6/12F1350 R291-2 Injection pump

: 0 460 426 134 Type number

Customer—specific information

Customer

: D 0826 GF Engine

TEST BENCH REQUIREMENTS

Calibrating oil return temp. ., C .

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 020 assembly

Opening

bar: 172...175 pressure

Perforated-plate

diameter mm:0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm : 0.35Prestroke

(from BDC): +0.02(0.04)

Indicator setting: Piston stroke mm: 1.0

Outlet

Injection pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1000 Speed

Charge press. hPa: -

Setting value mm: 3,1...3,5

Supply-pump pressure:

1/min: 1000 Speed Setting value bar: 5,9...6,5

Full-load del. with charge press.:

1/min: 1000 Speed

Del.quantity cm3/ 1000H.: 97,5...98,5 Dispersion cm3/: 4,0

1000H : (4,5)

Low-idle speed regulation:

1/min: 300 Speed

Del.quantity cm3/ 1000H.: 19,0...25,0 Dispersion cm3/: 3,5 1000H.: (4,0)

Full-load speed regulation:

1/min: 1400

Del.quantity cm3/

1000H: 73,0...79,0

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 70,0 mind

Load-dependent start of delivery:

1/min: 1000 Speed

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 800 1st speed

mm: 0,9...1,7 mm: (0,6...2,0) TD travel

1/min: 1000 2nd speed mm: 3,1...3,5 TD travel

mm: (2,6...4,0)1/min: 1100 3rd speed

mm: 4,0...4,8 mm: (3,7...5,1) TD travel

Supply-pump pressure characteristic:

1/min: 600 1st speed

Supply-pump

bar: 3,9...4,5 pressure

1/min: 1000 2nd speed

Supply-pump bar: 5,9...6,5 1/min: 1350 pressure 3rd speed Supply-pump bar: 7,5...8,1 pressure Overflow quantity at overflow valve: 1st speed 1/min: 600 : 41...83 Oveflow quantity cm3/10s: (26...98) 1/min: 1350 2nd speed : 55...138 Overflow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1/min: 1550 1st speed cm3/: 0,0...3,0 Del.quantity 1000H .: -1/min: 1500 2nd speed cm3/: 0,0...20,0 Del.quantity 1000H.: 1/min: 1450 3rd speed cm3/: 20,0...60,0 Del.quantity 1000H.: 1/min: 1400 4th speed Del.quantity cm3/: 73,0...79,0 1000H.: (71,5...80,5) 1/min: 1350 5th speed / cm3/: 93,5...96,5 1000H.: (92,0...98,0) 1/min: 1000 Del.quantity 6th speed cm3/: 97,5...98,5 Del.quantity 1000H.: (95,5...100,5) 7th speed 1/min: 800 Del.quantity cm3/: 96,0...100,0 1000H.: (94,5...101,5) 8th speed 1/min: 600 Del.quantity cm3/: 93,0...97,0 1000H: (91,5...98,5) Zero delivery (stop): Mech. shutoff: 1/min: 1350 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 300 Speed **ELAB** volt: -Del.quantity cm3/: 0,0...3,0 1000H.: -Idle delivery: 1/min: 300

Del.quantity cm3/: 19,0..25,0 1000H.: (17,0..27,0) 2nd speed 1/min: 450 Del.quantity cm3/: 0,0...4,0 1000H.: -Automatic starting fuel delivery: 1/min: 250 1st speed Del.quantity cm3/: -1000H: 105,0 ind. 1/min: 400 2nd speed Del.quantity cm3/: -max. 1000H: 110,0 Shutoff electromagnet: Cut-in min. voltage : 20,0 : 24,0 Rated voltage

Mounting and assembly dimensions:

Designation K KF mm : 5,1...5,5 mm : 0,8...1,2 MS mm SVS max. : 4,2 mm : 17,0...19,0 XK mm XL : 11,9...15,3 mm

Remarks:

H28

1st speed

Note inst. in remarks column

: CUM 5.9 U35 : 23.10.89 Test sheet Edition : 10.07.89 replaces Calibrating oil : ISO 4113

Injection pump : VE 6/12F1000 R369 : 0 460 426 138 Type number

Customer-specific information

Customer : CDC

: 6 BT - 5.9 IND.Engine

TEST BENCH REQUIREMENTS

Calibrating oil return temp. "C

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm : 0.3Prestroke

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1.5

mm: +-0.02(0.06)

Outlet : D

Injection pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750 Speed Setting value mm: 3.0...3.4 Supply-pump pressure:

1/min: 750 Speed Setting value bar: 3.3...3.9

Full-load del. w/out charge press.:

1/min: 850 Speed

Del.quantity cm3/ 1000H.: 63.0...64.0

cm3/: 4.0Dispersion

1000H .: (4.5)

Low-idle speed regulation:

Speed 1/min: 450

Del.quantity cm3/

1000H.: 4.0...10.0

cm3/: 5.5 Dispersion

1000H.: (7.0)

Full-load speed regulation:

1/min: 1040 Speed

Del.quantity cm3/ 1000H: 53.0...59.0

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 60.0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500

mm: 1.2...2.0 TD travel mm: (0.9...2.3)

1/min: 750 2nd speed

mm: 3.0...3.4 TD travel

mm: (2.5...3.9)

1/min: 1000 3rd speed

TD travel mm: 4.6...5.4 mm: (4.3...5.7)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2.3...2.9 pressure bar: (2.1...3.1)

2nd speed 1/min: 750

Supply-pump

bar: 3.3...3.9 pressure

bar: (3.1...4.1)

Del.quantity cm3/: 4.0...10.0 1000H.: (2.0...12.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.0...4.0 1000H.: (0.0...4.0) 1/min: 1000 3rd speed Supply-pump bar: 4.5...5.1 pressure bar: (4.3...5.3) Overflow quantity at overflow valve: Automatic starting fuel delivery: 1/min: 500 1st speed 1/min: 130 Oveflow : 41...83 1st speed cm3/10s: (26...98) Del.quantity cm3/: quantity 1000H: 70.0 1/min: 1000 2nd speed ind. : 55...138 Overflow quantity cm3/10s: (40...153) 2nd speed 1/min: 240 Del.quantity cm3/: -max. 1000H: 35.0 Delivery-quant. and breakaway char.: 1/min: 1120 Shutoff electromagnet: 1st speed Del.quantity cm3/: 0.0...3.0 1000H.: (0.0...3.0) Cut-in 1/min: 1100 min. voltage : 20.0 2nd speed Del.quantity cm3/: 0.0...15.0 1000H.: (0.0...15.0) Rated voltage : 24.0 1/min: 1060 Mounting and assembly dimensions: 3rd speed Del.quantity cm3/: 25.0...55.0 1000H.: (25.0...55.0) Designation 1/min: 1040 4th speed K mm Del.quantity cm3/: 53.0...59.0 1000H.: (50.0...62.0) 5th speed 1/min: 1000 KF : 5.0...5.4 mm : 0.8...1.2 MS m : 1.2 SVS max. mn Del.quantity cm3/: 60.0...63.0 1000H.: (58.5...64.5) : 18.8...20.8 XK mm 9.9...13.3 XL mm 1/min: 850 6th speed Del.quantity cm3/: 63.0...64.0 1000H: (60.5...66.5) 7th speed 1/min: 750 Remarks: : C.D.C. # 391 7563 Del.quantity cm3/: 61.0...65.0 1000H.: (59.0...67.0) 1/min: 500 8th speed Del.quantity cm3/: 38.5...46.5 1000H: (36.5...48.5) Zero delivery (stop): Mech. shutoff: 1/min: 1000 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 450 Speed ELAB volt: -Del.quantity cm3/: 0.0...3.0 max. 1000H.: -Idle delivery: 1st speed 1/min: 450

Note inst. in remarks column

: CAS 5,9 G : 07.11.89 Test sheet Edition

replaces

: ISO 4113 Calibrating oil

: VE 6/12F1100 R371 Injection pump : 0 460 426 140 Type number

Customer-specific information

Customer : CASE

: 6 BT-5.9TND Engine

TEST BENCH REQUIREMENTS

Calibrating-oil

return temp. , C ... with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 027

Openina

bar: 250...253 pressure

Perforated-plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm : 0,2Prestroke

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke

mm: 1,5 mm: +-0,02(0,06)

Outlet : D

Injection pump setting values Test specifications in parentheses

Timing device travel:

1/min: 750 Speed

Setting value mm: 2,6...3,0

Supply-pump pressure:

1/min: 750 Setting value bar: 4,9...5,5

Full-load del. w/out charge press.:

 $1/\min : 750$ Speed

Del.quantity cm3/

1000H.: 58,5...59,5 cm3/: 4,0

Dispersion

1000H.: (4,5)

Low-idle speed regulation:

1/min: 400 Speed

Del.quantity cm3/ 1000H.: 8,0...12,0 Dispersion cm3/: 5,5

1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1160

Del.quantity cm3/

1000H: 41,0...47,0

Start:

Speed 1/min: 100 Del.quantity

cm3/1000H.: 35,0 mind

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 500 1st speed

mm: 0,6...1,4mm: (0,3...1,7)TD travel

1/min: 750 2nd speed

mm: 2,6...3,0 mm: (2,1...3,5) TD travel

1/min: 1100 3rd speed

TD travel

mm: 5,0...5,8 mm: (4,7...6,1)

Supply-pump pressure characteristic:

1st speed 1/min: 500

Supply-pump

bar: 3,8...3,4 1/min: 750 pressure

2nd speed

Supply-pump

bar: 4,9...5,5 pressure 1/min: 1100 3rd speed

J03

Automatic starting fuel delivery: Supply-pump bar: 6,4...7,0 pressure 1/min: 220 1st speed Del.quantity Overflow quantity at overflow valve: cm3/: -1000H: 45,0 ind. 1/min: 500 1st speed : 41...83 1/min: 420 Oveflow 2nd speed cm3/10s: (26...98) Del.quantity cm3/: -max. 1000H: 70,0 quantity 1/min: 1100 2nd speed max. : 55...138 Overflow quantity cm3/10s: (40...153) Shutoff electromagnet: Cut-in Delivery-quant. and breakaway char.: min. voltage : 10,0 Rated voltage : 12,0 1st speed 1/min: 1210 Del.quantity cm3/: 0,0...3,0 1000H.: -Mounting and assembly dimensions: 1/min: 1180 2nd speed Del.quantity cm3/: 15,0...55,0 1000H.: -Designation mm 1/min: 1160 cm3/: 41,0...47,0 KF 3rd speed mm : 0,8...1,2 Del.quantity MS mm 1000H.: (38,0...50,0) : 4,5 SVS max. mm : 18,8...20,8 1/min: 1100 4th speed XK mm : 11,3...14,7 Del.quantity cm3/: 55,5...58,5 1000H.: (54,0...60,0) XL mm 1/min: 900 Remarks: 5th speed Del.quantity cm3/: 57,5...60,5 1000H.: (56,0...62,0) 1/min: 750 6th speed 1/min: 500 7th speed Del.quantity cm3/: 50,5...58,5 1000H.: -Zero delivery (stop): Mech. shutoff: Speed 1/min: 1100 Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 400 Speed volt: -EI AB Del.quantity cm3/: 0,0...3,0 max. 1000H.: -Idle delivery: 1/min: 400 1st speed Del.quantity cm3/: 8,0...12,0 1000H.: (5,0...15,0) 1/min: 450 2nd speed Del.quantity cm3/: 0,0...4,0 1000H.: -

5,0...5,4

Note inst. in remarks column

Test sheet : CUM 5.9 W6 Edition : 20.10.89

replaces

Calibrating oil : ISO 4113

: VE 6/12F1150 R373/1 Injection pump

: 0 460 426 144 Type number

Customer-specific information

Customer

Engine : 6 BT - 5.9 IND.

TEST BENCH REQUIREMENTS

Calibrating-oil

return temp. , C .

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Openina

bar: 250...253 pressure

Perforated-plate

mm: 0.5 diameter

Test ini. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm:0.3Prestroke

(from BDC): +0.02(0.04)

Start of delivery block Piston stroke mm: 1.85

mm: +-0.02(0.06)

Outlet. : D

Injection-pump setting values Test specifications in parentheses

Timing device travel:

1/min: 750 Charge press. hPa: 1000 Setting value mm: 1.6...2.0

Supply-pump pressure:

Speed 1/min: 750 Charge press. hPa: 1000 Setting value bar: 3.3...3.9

Full-load del. with charge press.:

Speed 1/min: 750 Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 82.5...84.5

cm3/:4.0Dispersion 1000H: (4.5)

Full-load del. w/out charge press.:

1/min : 500 Speed

Del.quantity cm3/

1000H.: 67.5...68.5

cm3/: 9.0Dispersion 1000H.: -

Low-idle speed regulation:

Speed 1/min: 375 Charge press. hPa: -

Del.quantity cm3/

1000H.: 9.0...13.0 cm3/: 5.5

Dispersion

1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1200 Charge press. hPa: 1000

Del.quantity cm3/ 1000H: 64.0...70.0

Start:

1/min: 100 Speed Charge press. hPa: -Del.quantity cm3/1000H.: 70.0 mind

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600 Charge press. hPa: 1000

mm: 0.5...1.3 mm: (0.2...1.6) TD travel

1/min: 750 2nd speed Charge press. hPa: 1000

TD travel mm: 1.62.0_	+ Charge press. hPa: 1000
mm: (1.12.5)	+ Del.quantity cm3/: 81.084.0
3rd speed 1/min: 1150	+ 1000H.: (79.585.5)
Charge press. hPa: 1000	+ 7th speed 1/min: 750
TD travel mm: 2.83.6	+ Charge press. hPa: 1000
mm: (2.53.9)	Charge press. hPa: 1000 Del.quantity cm3/: 82.583.5 1000H.: (80.086.0)
	+ 1000H.: (80.086.0)
Supply-pump pressure characteristic:	+ 8th speed 1/min: 500
	+ Charge press. hPa: 1000
1st speed 1/min: 500	+ Del.quantity cm3/: 82.090.0
Charge press. hPa: 1000	+ 1000H: -
Supply-pump	+ 9th speed 1/min: 5000
pressure bar: 2.63.2	+ Charge press. hPa: -
bar: (2.43.4)	+ Del.quantity cm3/: 67.568.5
2nd speed 1/min: 750	1000H: (63.572.5)
Charge press. hPa: 1000	+
Supply-pump	<pre></pre>
pressure bar: 3.33.9	+
bar: (3.14.1)	4 Mech. shutoff:
3rd speed 1/min: 1150	+
Charge press. hPa: 1000	+ Speed 1/min: 1150
Supply-pump	- Del.quantity cm3/: 03
pressure bar: 4.95.5	1000H.: -
bar: (4.75.7)	1
Date Creeks	+ Electr. shutoff:
Overflow quantity at overflow valve:	
over real quarterey at over real vactor	+ Speed 1/min: 375
1st speed 1/min: 500	+ ELAB volt: -
Charge press. hPa: -	L Del quantity cm3/: 00 30
Oveflow : 4183	Del.quantity cm3/: 0.03.0 max. 1000H.: -
quantity cm3/10s: 2698	1 100011.
2nd speed 1/min: 1150	Idle delivery:
	I de decivery.
Charge press. hPa: 1000 Overflow: 55138	1st speed 1/min: 375
quantity cm3/10s: 40153	Del.quantity cm3/: 9.013.0
quantity clip/105: 40155	1000H.: (6.016.0)
Nelfinery and breakening above	+ 2nd speed 1/min: 500
Delivery-quant. and breakaway char.:	T 21d speed 1/11/11. 500
1 at annual 1/mins 700th	+ Del.quantity cm3/: 0.04.0 + 1000H.: (0.04.0)
1st speed 1/min: 700*	10001(0.04.0)
Charge-air pressure-setting	Automotic stanting fuel delivery:
point hPa: 400	Automatic starting fuel delivery:
Del.quantity cm3/: 77.578.5	T 1st speed 1/min: 280
1000H.: (73.582.5)	Change and hoos
2nd speed 1/min: 1300	Charge press. hPa: - Del.quantity cm3/: - ind. 1000H: 75.0 2nd speed 1/min: 440 Charge press. hPa: - Del.quantity cm3/: - max. 1000H: 80.0 Shutoff electromagnet:
Charge press. hPa: 1000	+ Del.quantity cm3/: - + ind. 1000H: 75.0
Del.quantity cm3/: 0.03.0	† ind. 1000H: 75.0
1000H.: (0.03.0)	T 2nd amond 1/mins 1/10
3rd speed 1/min: 1230	+ 2nd speed 1/min: 440
Charge press. hPa: 1000	the Charge press. hPa: -
Del.quantity cm3/: 15.055.0	+ Del.quantity cm3/: -
1000H.: (15.055.0)	+ max. 1000H: 80.0
4th speed 1/min: 1200	
Charge press. hPa: 1000	+ Shutoff electromagnet:
Del.quantity cm3/: 64.070.0	†
1000H.: (61.073.0)	+ Cut-in
5th speed 1/min: 1150	+ min. voltage : 10.0
Charge press. hPa: 1000	+ Rated voltage : 12.0
Del.quantity cm3/: 76.079.0	†
1000H.: (74.580.5)	+ Mounting and assembly dimensions:
6th speed 1/min: 900	1

Designation K KF m : 5.0...5.4 : 1.0...1.4 : 1.6 m MS SVS max. mm m

Remarks:

: C.D.C. # 391 6894

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

Note inst. in remarks column

: CUM 5.9 U36 Test sheet Edition : 23.10.89 : 10.07.89 replaces Calibrating oil : ISO 4113

: VE 6/12F1050 R373-2 : 0 460 426 145 Injection pump

Type number

Customer-specific information

Customer

: 6 BTA - 5.9 IND. Engine

k: 118 Power 1/mi: 2100 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. "C.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

pressure bar: 250...253

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm : 0.3Prestroke

(from BDC): +0.02(0.04)

Start of delivery block mm: 1.85 Piston stroke

mm: +-0.02(0.06)

Outlet : D

Injection pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750 Charge press. hPa: 1000 Setting value mm: 1.5...1.9

Supply-pump pressure:

1/min: 750 Speed Charge press. hPa: 1000 Setting value bar: 2.9...3.5

Full-load del. with charge press.:

1/min: 750 Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 94.5...95.5

cm3/: 4.0 1000H: (4.5) Dispersion

Full-load del. w/out charge press.:

Speed $1/\min : 500$

Del.quantity cm3/ 1000H.: 50.5...51.5 Dispersion cm3/: 9.0 1000H.: -

Low-idle speed regulation:

1/min: 375 Speed Charge press. hPa: -

Del.quantity cm3/ 1000H.: 8.0...12.0 Dispersion cm3/: 5.5 1000H.: (7.0)

Full-load speed regulation:

1/min: 1100 Speed Charge press. hPa: 1000

Del.quantity cm3/

1000H: 73.0...79.0

Start:

1/min: 100 Speed Charge press. hPa: -Del.quantity : -mind cm3/1000H.: 60.0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600 Charge press. hPa: 1000

TD travel mm: 0.51.4	+ Charge press. hPa: 1000
ID LIGVEL IIIII. U.J	T charge press. and toob
mm: (0.21.6)	Del.quantity cm3/: 83.586.5 1000H.: (82.088.0)
2nd speed 1/min: 750	1000H.: (82.088.0)
Change appear has 1000	+ 6th speed 1/min: 900
Charge press. hPa: 1000	T 0th speed 1/11111. 200
TD travel mm: 1.51.9	+ Charge press. hPa: 1000
mm: (1.02.4)	+ Del.quantity cm3/: 87.590.5
3rd speed 1/min: 1050	1000H.: (86.092.0)
314 Speed 1781111 1000	
Charge press. hPa: 1000	† 7th speed 1/min: 750
TD travel mm: 2.53.4	+ Charge press. hPa: 1000
mm: (2.23.6)	Dol quantity cm3/. 0/. 5 05 5
11111. (2.2)	Del.quantity cm3/: 94.595.5 1000H.: (92.098.0)
	† 1000H.: (92.098.0)
Supply-pump pressure characteristic:	+ 8th speed 1/min: 500
cable of the mile to account a community of the community	Charge press. hPa: 1000
4. t	Del minutation 27/2 00 0 404 0
1st speed 1/min: 500	+ Del.quantity cm3/: 98.0106.0
Charge press. hPa: 1000	- 1000H: −
Supply-pump	+ 9th speed 1/min: 500
supply pulp	
pressure bar: 1.82.4	+ Charge press. hPa: -
bar: (1.62.6)	+ Del.quantity cm3/: 50.551.5
2nd speed 1/min: 750	1000H: (46.555.5)
diamental language (000	100011. (40.555.57
Charge press. hPa: 1000	_ †
Supply-pump	+ Zero delivery (stop):
pressure bar: 2.93.5	
ban. (2.7.11313)	Mark should.
bar: (2.73.7)	† Mech. shutoff:
3rd speed 1/min: 1050	+
Charge press. hPa: 1000	+ Speed 1/min: 1050
	00000 1/11111 1050
Supply-pump	+ Del.quantity cm3/: 03
pressure bar: 4.34.9	+ 1000H.: −
bar: (4.15.1)	∔
DG(. (T. () . ()	+ Electr. shutoff:
	† Electr. Shutoff:
Overflow quantity at overflow valve:	+
, <u> </u>	
	→ Sneed 1/min: 375
1st spand 1/mins 500	+ Speed 1/min: 375
1st speed 1/min: 500	+ ELAB volt: -
Charge press. hPa: -	+ ELAB volt: - + Del.quantity cm3/: 0.03.0
Charge press. hPa: -	+ ELAB volt: - + Del.quantity cm3/: 0.03.0
Charge press. hPa: - Oveflow : 4183	+ ELAB volt: -
Charge press. hPa: - Oveflow: 4183 quantity cm3/10s: (2698)	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: -
Charge press. hPa: - Oveflow: 4183 quantity: cm3/10s: (2698) 2nd speed: 1/min: 1050	+ ELAB volt: - + Del.quantity cm3/: 0.03.0
Charge press. hPa: - Oveflow: 4183 quantity: cm3/10s: (2698) 2nd speed: 1/min: 1050	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: -
Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery:
Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375
Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: - 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0
Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375
Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153)	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0)
Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: - 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500
Charge press. hPa: — Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.:	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: - 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 - 1000H.: (5.015.0) - 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0
Charge press. hPa: — Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.:	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: - 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500
Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700*	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: - 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 - 1000H.: (5.015.0) - 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0
Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char:: 1st speed 1/min: 700* Charge-air pressure-setting	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0)
Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: - 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 - 1000H.: (5.015.0) - 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0
Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0)
Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 Del.quantity cm3/: 79.580.5	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery:
Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 Del.quantity cm3/: 79.580.5 1000H.: (75.584.5)	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery: 1st speed 1/min: 250
Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 Del.quantity cm3/: 79.580.5 1000H.: (75.584.5) 2nd speed 1/min: 1200	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery: 1st speed 1/min: 250 Charge press. hPa: -
Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 Del.quantity cm3/: 79.580.5 1000H.: (75.584.5) 2nd speed 1/min: 1200 Charge press. hPa: 1000	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery: 1st speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: -
Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 Del.quantity cm3/: 79.580.5 1000H.: (75.584.5) 2nd speed 1/min: 1200 Charge press. hPa: 1000	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery: 1st speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: -
Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 Del.quantity cm3/: 79.580.5	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery: 1st speed 1/min: 250 Charge press. hPa: -
Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 Del.quantity cm3/: 79.580.5 1000H.: (75.584.5) 2nd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0.03.0 1000H.: (0.03.0)	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery: 1st speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: - ind. 1000H: 45.0
Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 Del.quantity cm3/: 79.580.5	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery: 1st speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: - ind. 1000H: 45.0 2nd speed 1/min: 450
Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 Del.quantity cm3/: 79.580.5	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery: 1st speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: - ind. 1000H: 45.0 2nd speed 1/min: 450
Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 Del.quantity cm3/: 79.580.5 1000H.: (75.584.5) 2nd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0.03.0 1000H.: (0.03.0) 3rd speed 1/min: 1140 Charge press. hPa: 1000	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery: 1st speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: - ind. 1000H: 45.0 2nd speed 1/min: 450 Charge press. hPa: -
Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 Del.quantity cm3/: 79.580.5 1000H.: (75.584.5) 2nd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0.03.0 1000H.: (0.03.0) 3rd speed 1/min: 1140 Charge press. hPa: 1000 Del.quantity cm3/: 15.055.0	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery: 1st speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: - ind. 1000H: 45.0 2nd speed 1/min: 450 Charge press. hPa: - Del.quantity cm3/: -
Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 Del.quantity cm3/: 79.580.5	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery: 1st speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: - ind. 1000H: 45.0 2nd speed 1/min: 450 Charge press. hPa: -
Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 Del.quantity cm3/: 79.580.5	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery: 1st speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: - ind. 1000H: 45.0 2nd speed 1/min: 450 Charge press. hPa: - Del.quantity cm3/: -
Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 Del.quantity cm3/: 79.580.5	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery: 1st speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: - ind. 1000H: 45.0 2nd speed 1/min: 450 Charge press. hPa: - Del.quantity cm3/: - max. 1000H: 55.0
Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 Del.quantity cm3/: 79.580.5	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery: 1st speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: - ind. 1000H: 45.0 2nd speed 1/min: 450 Charge press. hPa: - Del.quantity cm3/: -
Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 Del.quantity cm3/: 79.580.5	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery: 1st speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: - ind. 1000H: 45.0 2nd speed 1/min: 450 Charge press. hPa: - Del.quantity cm3/: - max. 1000H: 55.0 Shutoff electromagnet:
Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge air pressure-setting point hPa: 300 Del.quantity cm3/: 79.580.5	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery: 1st speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: - ind. 1000H: 45.0 2nd speed 1/min: 450 Charge press. hPa: - Del.quantity cm3/: - max. 1000H: 55.0 Shutoff electromagnet: Cut-in
Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 Del.quantity cm3/: 79.580.5	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery: 1st speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: - ind. 1000H: 45.0 2nd speed 1/min: 450 Charge press. hPa: - Del.quantity cm3/: - max. 1000H: 55.0 Shutoff electromagnet: Cut-in
Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1050 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 Del.quantity cm3/: 79.580.5	ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8.012.0 1000H.: (5.015.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0.04.0 1000H.: (0.04.0) Automatic starting fuel delivery: 1st speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: - ind. 1000H: 45.0 2nd speed 1/min: 450 Charge press. hPa: - Del.quantity cm3/: - max. 1000H: 55.0 Shutoff electromagnet:

Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K KF mm mm : 5.0...5.4 mm : 1.2...1.6 mm : 1.2 MS SVS max.

Remarks:

: C.D.C. # 391 7000 Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

Note inst. in remarks column

: CUM 5.9 W4 Test sheet : 20.10.89 Edition

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1325 R367-1

Type number : 0 460 426 146

Customer-specific information

Customer : CDC

: 6 BT 5.9 IND. Engine

k: 97 Power 1/mi: 2650 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil

return temp. ,C . with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

pressure bar: 250...253

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm : 0.3Prestroke

(from BDC): +0.02(0.04)

Start of delivery block mm: 1.5 Piston stroke

mm: +-0.02(0.06)

: D Outlet

Injection pump setting values

Test specifications in parentheses

Timing-device travel:

1/min: 850 Speed

Setting value mm: 3.9...4.3

Supply-pump pressure:

1/min: 850 Setting value bar: 3.9...4.5

Full-load del. w/out charge press.:

1/min: 1100 Speed

Del.quantity cm3/ 1000H.: 56.0...57.0

cm3/: 4.0 Dispersion

1000H.: (4.5)

Low-idle speed regulation:

1/min: 375

Del.quantity cm3/ 1000H.: 8.0...14.0

cm3/: 5.5 Dispersion

1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1400

Del.quantity cm3/

1000H: 36.0...42.0

Start:

1/min: 100 Speed Del.quantity

cm3/1000H.: 60.0 mind

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500

mm: 1.3...2.1 mm: (1.0...2.4) TD travel

2nd speed 1/min: 850

mm: 3.9...4.3 mm: (3.4...4.8) TD travel

1/min: 1100 3rd speed

mm: 5.9...6.7 mm: (5.6...7.0) TD travel

Supply-pump pressure characteristic:

1st speed 1/min: 500

Supply-pump

bar: 2.5...3.1 bar: (2.3...3.3) pressure

1/min: 850 2nd speed

Supply-pump bar: 3.9...4.5 bar: (3.7...4.7) pressure 1/min: 1100 3rd speed Supply-pump bar: 4.9...5.5 bar: (4.7...5.7) pressure Overflow quantity at overflow valve: 1st speed 1/min: 500 Oveflow : 41...83 cm3/10s: (26...98) quantity 1/min: 1325 2nd speed Overflow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1/min: 1520 1st speed cm3/: 0.0...3.0Del.quantity 1000H.: (0.0...3.0) 1/min: 1440 2nd speed Del.quantity cm3/: 15.0...45.0 1000H.: (15.0...45.0) 3rd speed 1/min: 1400 Del.quantity cm3/: 36.0...42.0 1000H.: (33.0...45.0) 1/min: 1325 4th speed Del.quantity cm3/: 52.5...55.5 1000H.: (51.0...57.0) 1/min: 1100 5th speed Del.quantity cm3/: 56.0...57.0 1000H.: (53.5...59.5) 1/min: 850 6th speed Del.quantity cm3/: 53.5...57.5 1000H.: (51.5...59.5) 7th speed 1/min: 500 Del.quantity cm3/: 38.5...46.5 1000H.: (36.5...48.5) Zero delivery (stop): Mech. shutoff: 1/min: 1325 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: Speed 1/min: 375 volt: -Del.quantity cm3/: 0.0...3.0 1000H.: max. Idle delivery:

Del.quantity cm3/: 8.0...14.0 1000H.: (6.0...16.0) 2nd speed 1/min: 450 Del.quantity cm3/: 0.0...4.0 1000H.: (0.0...4.0) Automatic starting fuel delivery: 1st speed 1/min: 130 Del.quantity cm3/: -1000H: 65.0 ind. 1/min: 250 2nd speed Del.quantity cm3/: -max. 1000H: 65.0 Shutoff electromagnet: Cut-in min. voltage : 20.0 Rated voltage : 24.0 Mounting and assembly dimensions: Designation K mm : 5.0...5.4 KF mm : 1.3...1.7 MS mm : 1.3 SVS max. mm Remarks: : C.D.C. # 391 6904

1st speed

1/min: 375

Note inst. in remarks column

: CUM 5.9 U45 Test sheet Edition : 23,10,89

replaces

Calibrating oil : ISO 4113

: VE 6/12F1250 R373/3 : 0 460 426 149 Injection pump

Type number

Customer-specific information

Customer : CDC

: 6 BTA - 590 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. "C.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Openina

bar: 250...253 pressure

Perforated-plate

mm : 0.5diameter

Test ini. tubing : 1 688 901 027

Outside diameter x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm: 0.3 Prestroke

(from BDC): +-0.02(0.04)

Start of delivery block

mm: 1.85 Piston stroke

mm: +-0.02(0.06)

: D Outlet

Injection pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750 Charge press. hPa: 1000 Setting value mm: 1.4...1.8

Supply-bump pressure:

1/min: 750 Speed Charge press. hPa: 1000 Setting value bar: 3.2...3.8

Full-load del. with charge press.:

Speed 1/min: 750 Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 82.0...83.0

cm3/: 4.0 1000H: (4.5) Dispersion

Full-load del. w/out charge press.:

1/min : 500 Speed

Del.quantity cm3/

1000H.: 40.0...41.0

Low-idle speed regulation:

1/min: 375 Speed Charge press. hPa: -Del.quantity cm3/ 1000H.: 4.0...8.0

cm3/: 5.5Dispersion

1000H.: (7.0)

Full-load speed regulation:

1/min: 1300 Speed Charge press. hPa: 1000

Del.quantity cm3/

1000H: 65.0...71.0

Start:

1/min: 100 Speed Charge press. hPa: -Del.quantity : -mind cm3/1000H.: 70.0

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 600 1st speed Charge press. hPa: 1000

mm: 0.4...1.2 TD travel

mm: (0.1...1.5)

1/min: 750 2nd speed Charge press. hPa: 1000 TD travel mm: 1.4...1.8

mm: (0.9...2.3)

Del.quantity cm3/: 78.0...81.0 1000H.: (76.5...82.5) 3rd speed 1/min: 1050 Charge press. hPa: 1000 TD travel mm: 2.3...3.1 1/min: 750 7th speed mm: (2.0...3.4) Charge press. hPa: 1000 Del.quantity cm3/: 82.0...83.0 1000H.: (79.5...85.5) 8th speed 1/min: 500 Charge press. hPa: 1000 Supply-pump pressure characteristic: 1st speed 1/min: 500 Del.quantity cm3/: 82.0...90.0 hPa: 1000 Charge press. 1000H: -Supply-pump bar: 2.1...2.7 bar: (1.9...2.9) 1/min: 750 1/min: 500 pressure 9th speed Charge press. hPa: -Del.quantity cm3/: 40.0...41.0 1000H: (36.5...44.5) 2nd speed hPa: 1000 Charge press. Supply-pump bar: 3.2...3.8 Zero delivery (stop): pressure bar: (3.0...4.0) 1/min: 1050 3rd speed Mech. shutoff: Charge press. hPa: 1000 Supply-pump Speed 1/min: 1250 Del.quantity cm3/: 0..3 1000H.: bar: 4.3...4.9 pressure bar: (4.1...5.1) Overflow quantity at overflow valve: Idle delivery: 1/min: 500 1st speed Charge press. hPa: -: 41...83 Oveflow quantity cm3/10s: (26...98) 1/min: 500 2nd speed Del.quantity cm3/: 0.0...4.0 1000H.: (0.0...4.0) 2nd speed 1/min: 1250 Charge press. hPa: 1000 verflow : 55...138 quantity cm3/10s: (40...153) Overflow Automatic starting fuel delivery: Delivery quant. and breakaway char .: 1st speed 1/min: 200 Del.quantity cm3/: -1000H: 60.0 ind. 1st speed 1/min: 700* Charge-air pressure-setting point hPa: 450 1/min: 370 2nd speed Del.quantity cm3/: - max. 1000H: 60.0 Del.quantity cm3/: 67.0...68.0 1000H.: (63.0...72.0) 1/min: 1400 2nd speed Charge press. hPa: 1000
Del.quantity cm3/: 0.0...3.0
1000H.: (0.0...3.0)
3rd speed 1/min: 1330 Mounting and assembly dimensions: Designation K mm KF Charge press. hPa: 1000 : 5.0...5.4 mm Del.quantity cm3/: 15.0...55.0 1000H.: (15.0...55.0) : 1.2...1.6 MS mm SVS max. 1/min: 1300 4th speed Charge press. hPa: 1000
Del.quantity cm3/: 65.0...71.0
1000H.: (62.0...74.0)
5th speed 1/min: 1250 Remarks: : C.D.C. # 391 7038 Operate control lever after each manifold-pressure compensator pressure Charge press. hPa: 1000
Del.quantity cm3/: 73.5...76.5
1000H.: (72.0...78.0)
6th speed 1/min: 1050 change. * Correction at adjusting nut (46) Charge press. hPa: 1000

Note inst. in remarks column

: CUM 5.9 U46 Test sheet : 23,10,89 Edition

replaces

: ISO 4113 Calibrating oil

: VE 6/12F1250 R373-4 Injection pump

: 0 460 426 150 Type number

Customer-specific information

Customer : CDC

: 6 BTA - 590 Engine

TEST BENCH REQUIREMENTS

Calibrating oil return temp. , C

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening |

bar: 250...253 pressure

Perforated plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke mm : 0.3

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1.85

mm: +0.02(0.06)

Outlet : D

Injection pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750 Speed Charge press. hPa: 1000 Setting value mm: 1.4...1.8

Supply-pump pressure:

1/min: 750 Charge press. hPa: 1000 Setting value bar: 3.2...3.8

Full-load del. with charge press.:

1/min: 750 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 82.0...83.0

cm3/: 4.0Dispersion 1000H: (4.5)

Full-load del. w/out charge press.:

Speed 1/min : 500

Del.quantity cm3/

1000H.: 40.0...41.0

Low-idle speed regulation:

1/min: 375 Speed Charge press. hPa: -Del.quantity cm3/

1000H.: 4.0...8.0

cm3/: 5.5 Dispersion 1000H.: (7.0)

Full-load speed regulation:

1/min: 1300 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H: 65.0...71.0

Start:

Speed 1/min: 100 Charge press. hPa: -Del.quantity cm3/1000H.: 70.0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing device characteristic:

1st speed 1/min: 600 Charge press. hPa: 1000

TD travel mm: 0.4...1.2

mm: (0.1...1.5) 1/min: 750 2nd speed

Charge press. hPa: 1000 mm: 1.4...1.8 TD travel

mm: (0.9...2.3)

3rd speed 1/min: 1050	+	1000H.: (76.582.5)
Charge press. hPa: 1000	†	
TD travel mm: 2.33.1	Ť	7th speed 1/min: 750
mm: (2.03.4)	Ť	Charge press. hPa: 1000 Del.quantity cm3/: 82.083.0
Comply many programs abandatanistics	T	1000H.: (79.585.5)
Supply-pump pressure characteristic:	T	
1st sheet 1/min. EM	Ť	8th speed 1/min: 500
1st speed 1/min: 500	T	Charge press. hPa: 1000
Charge press. hPa: 1000	Ť	Del.quantity cm3/: 82.090.0
Supply-pump	1	1000H:
pressure bar: 2.12.7	+	9th speed 1/min: 500
bar: (1.92.9)	+	Charge press. hPa: -
2nd speed 1/min: 750	+	Del.quantity cm3/: 40.041.0
Charge press. hPa: 1000	+	1000H: (36.045.0)
Supply-pump 2222	+	Tong Salling Catana
pressure bar: 3.23.8	+	Zero delivery (stop):
bar: (3.04.0)	+	
3rd speed 1/min: 1050	+	Mech. shutoff:
Charge press. hPa: 1000	+	- 1 4/1 4055
Supply-pump	+	Speed 1/min: 1250
pressure bar: 4.34.9	+	Del.quantity cm3/: 03
bar: (4.15.1)	+	1000н.: -
	+	
Overflow quantity at overflow valve:	+	Electr. shutoff:
	+	
1st speed 1/min: 500	+	Speed 1/min: 375
Charge press. hPa: -	+	ELAB volt: -
Oveflow : 4183	+	Del.quantity_cm3/: 0.03.0
quantity cm3/10s: (2698)	+	max. 1000H.: -
2nd speed 1/min: 1250	+	
Charge press. hPa: 1000	+	Idle delivery:
Overflow : 55138	+	•
quantity cm3/10s: (40153)	+	1st speed 1/min: 375
•	+	Del.quantity cm3/: 4.08.0
Delivery-quant. and breakaway char.:	+	1000H.: (1.011.0)
	+	2nd speed 1/min: 500
1st speed 1/min: 700*	+	Del.quantity cm3/: 0.04.0
Charge-air pressure-setting	+	1000H.: (0.04.0)
point hPa: 450	+	
Del.quantity cm3/: 67.068.0	+	Automatic starting fuel delivery:
1000H.: (63.571.5)	+	,
2nd speed 1/min: 1400	1	1st speed 1/min: 200
Charge press. hPa: 1000	+	Del.quantity cm3/: -
Del.quantity cm3/: 0.03.0	+	ind. 1000H: 60.0
1000H.: (0.03.0)	+	,,,,,,,
3rd speed 1/min: 1330	+	2nd speed 1/min: 370
Charge press. hPa: 1000	1	Del.quantity cm3/: -
Del.quantity cm3/: 15.055.0	1	max. 1000H: 60.0
1000H.: (15.055.0)	1	100011 1 0010
4th speed 1/min: 1300	1	Shutoff electromagnet:
Charge press. hPa: 1000	L	ondcorr ecectromagnee.
Del.quantity cm3/: 65.071.0	1	Cut-in
1000H.: (62.074.0)	I	min. voltage : 20.0
	I	Rated voltage : 24.0
	I	nated vottage . LT.U
	I	Mounting and assembly dimensions:
Del.quantity cm3/: 73.576.5 1000H.: (72.078.0)	I	mounting and assembly differentials.
	I	Decignation
	Ι	Designation mm :-
Charge press. hPa: 1000	I	K mm : - KF mm : 5.05.4
		N: 1101 . J.UJ.⇔

MS SVS max. mm : 1.2...1.6 mm : 2.2

Remarks:

: C.D.C. # 391 7037 Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

Note inst. in remarks column

: CUM 5.9 W7 Test sheet Edition : 24.10.89

replaces

: ISO 4113 Calibrating oil

: VE 6/12F1100 R373-5 Injection pump

Customer-specific information

Customer : CDC

Engine : 6 BT - 5.9 IND.

k: 127.0 Power 1/mi: 2200 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil

return temp. ., C . with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

bar: 250...253 pressure

Perforated plate

mm: 0.5 diameter

Test ini. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm:0.3Prestroke

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1.85

mm: +-0.02(0.06)

Outlet : D

Injection pump setting values

Test specifications in parentheses

Timina-device travel:

1/min: 750 Speed Charge press. hPa: 1000 Setting value mm: 1.3...1.7

Supply-pump pressure:

Speed 1/min: 750 Charge press. hPa: 1000 Setting value bar: 3.2...3.8

Full-load del. with charge press.:

1/min: 750 Speed Charge press. hPa: 1000 Del.quantity cm3/ 1000H.: 83.0...84.0

cm3/: 4.0Dispersion 1000H: (4.5)

Full-load del. w/out charge press.:

1/min : 500 Speed

Del.quantity cm3/

1000H.: 67.5...68.5

Dispersion cm3/: 9.01000H.: -

Low-idle speed regulation:

1/min: 375 Speed

Del.quantity cm3/ 1000H.: 9.0...13.0

cm3/: 5.5 Dispersion

1000H.: (7.0)

Full-load speed regulation:

1/min: 1150 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H: 60.0...66.0

Start:

1/min: 100 Speed Del.quantity mind cm3/1000H.: 80.0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 600 1st speed Charge press. hPa: 1000

TD travel mm: 0.4...1.2mm: (0.1...1.5)

1/min: 750 2nd speed Charge press. hPa: 1000

mn:	1.31.7 (0.82.2)	‡	Charge press. hPa: 1000 Del.quantity cm3/: 80.583.5
3rd speed 1/min: 1 Charge press. hPa: 1		1	1000H.: (79.085.0) 7th speed 1/min: 750
TD travel mm: 2	22 30	1	Charge press. hPa: 1000
mm:	(1.93.3)	Ī	Del.quantity cm3/: 83.084.0 1000H.: (80.586.5)
Supply-pump pressure	characteristic:	†	8th speed 1/min: 500 Charge press. hPa: 1000
1st speed 1/min: 6	600	1	Del.quantity cm3/: 81.089.0
Charge press. hPa:	1000	+	1000H: -
Supply-pump		+	9th speed 1/min: 500
pressure bar: 2	2.63.2	+	Charge press. hPa: -
bar:	(2.43.4)	+	Del.quantity cm3/: 67.568.5
2nd speed 1/min: 7	75U 4000	†	1000H: (63.572.5)
Charge press. hPa: 1	1000	T	Tono dolivory (oton):
Supply-pump pressure bar: 3	7	I	Zero delivery (stop):
pressure bar. s	(3.04.0)	I	Mech. shutoff:
3rd speed 1/min:	1100	1	Ticon. Silacorr.
Charge press. hPa:	1000	1	Speed 1/min: 1100
Supply-pump		+	Del.quantity cm3/: 03
pressure bar:	4.75.3	+	1000H.: -
	(4.55.5)	+	
		+	Electr. shutoff:
Overflow quantity at	overflow valve:	+	and the same
	500	+	Speed 1/min: 375
1st speed 1/min: 5	500	+	ELAB Volt: -
Charge press. hPa:	- /4 97	+	Del.quantity cm3/: 0.03.0
Oveflow : 4	4103 /24 001	T	max. 1000H.: -
quantity cm3/10s: (2nd speed 1/min: 1	(<u>/</u> 070) 1100	T	Idle delivery:
Charge press. hPa: 1		Ι	Tute detivery.
Overflow : 5	55138	1	1st speed 1/min: 375
quantity cm3/10s:	(40153)	1	Del.quantity cm3/: 9.013.0
quanto o o o o o o o o o o o o o o o o o o		+	1000H.: (6.016.0)
Delivery-quant. and b	breakaway char.:	+	2nd speed 1/min: 500
		+	Del.quantity_cm3/: 0.04.0
1st speed 1/min: 7		+	1000H.: (0.04.0)
Charge-air pressure-s	setting '00	†	Andreas Assessant deliceres
point hPa: 4		†	Automatic starting fuel delivery:
Del.quantity cm3/: 7	(73.582.5)	I	1st speed 1/min: 280
2nd speed 1/min: 1		I	Deliquantity cm3/: -
Charge press. hPa: 1		1	ind. 1000H: 80.0
Del.quantity cm3/: 0	0.03.0	1	11,55
1000H.: ((0.03.0)	+	2nd speed 1/min: 440
3rd speed 1/min: 1		+	Del.quantity cm3/: -
Charge press. hPa: 1	1000	+	max. 1000H: 80.0
Del.quantity cm3/: 1		+	
	(15.055.0)	+	Shutoff electromagnet:
4th speed 1/min: 1		†	Code dim
Charge press. hPa: 1 Del.quantity cm3/: 6	1000 40 0 - 44 0	Ī	Cut-in min. voltage : 10.0
1000 1000 1000 1000 1000 1000 1000 100	(57.069.0)	I	Rated voltage : 12.0
5th speed 1/min: 1	1100	I	nated votedge . IE.O
Charge press. hPa: 1		1	Mounting and assembly dimensions:
Del.quantity cm3/: 7		1	The second secon
1000H.: ((77.083.0)	+	Designation
6th speed 1/min: 9		+	K mm : -

mm : 5.0...5.4 mm : 1.0...1.4 mm : -KF MS SVS max.

Remarks:

: C.D.C. # 391 6910

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

Note inst. in remarks column

: CUM 5,9W12 Test sheet Edition : 14.11.89

replaces

Calibrating oil : ISO 4113

: VE 6/12F1100 R381-1 Injection pump

Type number : 0 460 426 153

Customer-specific information

Customer : CDC

Engine : 6 BT-5.9 IND.

k: 104 Power 1/mi: 2200 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. ., C

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250...253 pressure

Perforated plate

diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke mm : 0,3

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1,5

mm: +-0.02(0.06)

: D Outlet

Injection pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750 Speed Setting value mm: 3,4...3,8

Supply-pump pressure:

1/min: 750

Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

1/min: 750

Del.quantity cm3/

1000H.: 71,5...72,5

cm3/: 4.0 Dispersion

1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375

Del.quantity cm3/

1000H.: 8,0...14,0

cm3/: 5,5 Dispersion

1000H.: (7,0)

Full-load speed regulation:

1/min: 1140 Speed

Del.quantity cm3/

1000H: 53,0...59,0

Start:

1/min: 100 Speed

Del.quantity cm3/1000H.: 60,0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing device characteristic:

1st speed 1/min: 500

mm: 1,5...2,3 mm: (1,2...2,7) TD travel

2nd speed 1/min: 750

TD travel

mm: 3,4...3,8 mm: (2,9...4,3)

1/min: 1100 3rd speed

TD travel

mm: 5,2...6,0 mm: (4,9...6,3)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2,4...3,0 1/min: 750 pressure

Supply-pump bar: 3,5...4,1 pressure 1/min: 1100 3rd speed Supply-pump pressure bar: 4,8...5,4 Overflow quantity at overflow valve: 1/min: 500 1st speed : 41...83 Oveflow cm3/10s: (26...98) quantity 1/min: 1100 2nd speed : 55...138 Overflow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char .: 1st speed 1/min: 1220 Del.quantity cm3/: 0,0...3,0 1000H.: -1/min: 1160 2nd speed Del.quantity cms/...
1000H.: cm3/: 15,0...45,0 3rd speed 1/min: 1140
Del.quantity cm3/: 53,0...59,0
1000H.: (50,0...62,0)
4th speed 1/min: 1100
Del.quantity cm3/: 5/5 Del.quantity cm3/: 66,5...69,5 1000H.: (65,0...71,0) 1/min: 900 5th speed Del.quantity cm3/: 71,5...(2,5) 1000H.: (69,0...75,0) 6th speed 1/min: 750 Del.quantity cm3/: 70,5...74,5 (68,5...76,5) 1/min: 500 7th speed Del.quantity cm3/: 56,0...64,0 1000H.: (54,0...66,0) Zero delivery (stop): Mech. shutoff: 1/min: 1100 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: Speed 1/min: 375 ELAB volt: 24,0 Del.quantity cm3/: 0,0...3,0 max. 1000H.: -Idle delivery: 1/min: 375 1st speed Del.quantity cm3/: 8,0...14,0 1000H.: (6,0...16,0)

1/min: 450

Del.quantity cm3/: 0,0...4,0 1000H.: -Automatic starting fuel delivery: 1st speed 1/min: 130 Del.quantity cm3/: -1000H: 60,0 ind. 1/min: 240 2nd speed Del.quantity cm3/: -max. 1000H: 60,0 Shutoff electromagnet: Cut-in : 20,0 min. voltage : 24,0 Rated voltage Mounting and assembly dimensions: Designation K mm : 5,0...5,4 KF MS : 0,8...1,2 mm SVS max. mm : 1.4Remarks:

Note inst. in remarks column

Test sheet : CUM 5.9 W8 Edition : 25.10.89

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1100 R381-2

: 0 460 426 154 Type number

Customer-specific information

Customer : CDC

: 6 BT - 5.9 IND. Engine

k: 89.0 Power 1/mi: 2200 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. "C

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250...253 pressure

Perforated-plate

mm:0.5diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm:0.3Prestroke

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1.5

mm: +-0.02(0.06)

Outlet : D

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750 Speed Setting value mm: 3.4...3.8

Supply-pump pressure:

1/min: 750 Setting value bar: 3.5...4.1

Full-load del. w/out charge press.:

1/min: 750 Speed

Del.quantity cm3/ 1000H.: 62.0...63.0

Dispersion cm3/: 4.0 1000H.: (4.5)

Low-idle speed regulation:

1/min: 375 Speed

Del.quantity cm3/ 1000H.: 10.0...12.0

cm3/: 5.5Dispersion 1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1150

Del.quantity cm3/

1000H: 39.0...45.0

Start:

1/min: 100 Speed Del.quantity

cm3/1000H.: 70.0 mind '

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 500 1st speed

mm: 1.5...2.3 mm: (1.2...2.6) 1/min: 750 TD travel

2nd speed

TD travel mm: 3.4...3.8

mm: (2.9...4.3)

1/min: 1100 3rd speed TD travel

mm: 5.6...6.4 mm: (5.3...6.7))

Supply-pump pressure characteristic:

1st speed 1/min: 500

Supply-pump

bar: 2.4...3.0 1/min: 750 pressure

Del.quantity cm3/: 0.0...4.0 1000H.: (0.0...4.0) Supply-pump bar: 3.5...4.1 pressure 1/min: 1100 3rd speed Automatic starting fuel delivery: Supply-pump bar: 4.8...5.4 pressure 1/min: 130 1st speed Del.quantity cm3/: -Overflow quantity at overflow valve: 1000H: 70.0 ind. 1/min: 500 1st speed : 41...83 Oveflow 1/min: 300 2nd speed cm3/10s: (26...98) quantity Del.quantity cm3/: -1000H: 80.0 1/min: 1100 2nd speed max. Overflow : 55...138 quantity cm3/10s: (40...153) Shutoff electromagnet: Delivery-quant. and breakaway char.: Cut-in : 20.0 min. voltage Rated voltage : 24.0 1st speed 1/min: 1250 Del.quantity cm3/: 0.0...3.0 1000H.: (0.0...3.0) Mounting and assembly dimensions: 2nd speed 1/min: 1170 Del.quantity cm3/: 13.0...55.0) Designation Κ mm 5.0...5.4 1/min: 1150 KF 3rd speed mm Del.quantity cm3/: 39.0...45.0 1000H.: (36.0...48.0) : 1.2...1.6 MS mm SVS max. mm 1/min: 1100 4th speed Del.quantity cm5/: 59.0...63.5) Remarks: : 1/min: 900 5th speed Del.quantity cm3/: 61.3...65.5)
4th speed 1/min: 750 cm3/: 62.0...63.0 Del.quantity 1000H.: (59.5...65.5) 1/min: 500 7th speed Del.quantity cm3/: 57.0...65.0 1000H.: -Zero delivery (stop): Mech. shutoff: 1/min: 1100 Speed Del.quantity cm3/: 0..3 1000H .: -Electr. shutoff: 1/min: 375 Speed ELAB volt: -Del.quantity cm3/: 0.0...3.0 1000H.: max. Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 10...12 1000H.: (6.0...16.0)

2nd speed

1/min: 500

Note inst. in remarks column

Test sheet : CUM 5.9 W13 Edition : 15.11.89

replaces

Calibrating oil : ISO 4113

: VE 6/12F1100 R381-3 Injection pump

Type number : 0 460 426 155

Customer-specific information

Customer : CDC

: 6 BT - 5.9 IND. Engine

k: 105 Power Speed 1/mi: 2100

TEST BENCH REQUIREMENTS

Calibrating oil return temp. .. C .

with thermometer: 40...48 : 42...50 electronically

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250...253 pressure

Perforated-plate

diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter x Wall thickness : 2 mm : 840x Lenath

Start of delivery

mm:0.3Prestroke

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1.5

mm: +-0.02(0.06)

Outlet : D

Injection pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750 Speed mm: 3.4...3.8 Setting value

Supply-pump pressure:

1/min: 750 Speed Setting value bar: 3.7...4.3

Full-load del. w/out charge press.:

 $1/\min : 750$

Deliquantity cm3/

1000H.: 75,0...76,0

cm3/: 4.0Dispersion

1000H.: (4.5)

Low-idle speed regulation:

1/min: 375 Speed

Speed
Del.quantity cm3/
1000H.: 10.0...12.0
Dispersion cm3/: 5.5 1000H.: (7.0)

Full-load speed regulation:

1/min: 1100 Speed

Del.quantity cm3/

1000H: 52.0...58.0

Start:

Speed 1/min: 100 Del.quantity

cm3/1000H.: 60.0 mind '

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500

mm: 1.3...2.1 TD travel mm: (1.0...2.4)

1/min: 750 2nd speed

TD travel mm: 3.4...3.8

mm: (2.9...4.3) 1/min: 1050 mm: 5.0...5,8

3rd speed

TD travel mm: (4,7...6,1)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2.6...32 1/min: 750 pressure

Del.quantity cm3/: 0.0...4.0 1000H.: -Supply-pump bar: 3.7...4.3 1/min: 1050 pressure 3rd speed Automatic starting fuel delivery: Supply-pump bar: 4.9...5.5 pressure 1/min: 130 1st speed Overflow quantity at overflow valve: Del.quantity cm3/: -1000H: 60.0 ind. 1/min: 500 1st speed : 41...83 1/min: 240 Oveflow 2nd speed cm3/10s: (26...98) Del.quantity cm3/: quantity 1/min: 1050 1000H: 60.0 2nd speed : 55...138 Overflow quantity cm3/10s: (40...153) Shutoff electromagnet: Delivery-quant. and breakaway char.: Cut-in min. voltage : 10.0 1/min: 1200 Rated voltage : 12.0 1st speed Del.quantity cm3/: 0.0...3.0 1000H.: (0.0...3.0) Mounting and assembly dimensions: 1/min: 1130 cm3/: 15.0...45.0 2nd speed Del.quantity cms/: 1 Designation Κ mm KF : 5.0...5.4 1/min: 1100 3rd speed cm3/: 52.0...58.0 : 0,8...1.2 Del.quantity MS mm 1000H.: (49.0...61.0) SVS max. mm 1/min: 1050 4th speed Del.quantity cm3/: 69,5...72,5 1000H.: (68,0...74,0) Remarks: 1/min: 900 5th speed Del.quantity cm3/: /2/3....77,5) 1/min: 750 6th speed Del.quantity cm3/: 75,0...76,0 1000H.: (72,5...78.5) 7th speed 1/min: 500 Del.quantity cm3/: 61,5...69,5 1000H.: (59,5...71,5) Zero delivery (stop): Mech. shutoff: 1/min: 1050 Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: Speed 1/min: 375 ELAB volt: -Del.quantity cm3/: 0.0...3.0 max. 1000H.: -Idle delivery: 1/min: 375 1st speed Del.quantity cm3/: 10,0...12, 1000H.: (6.0...16.0)

2nd speed

1/min: 450

Note inst. in remarks column

: CUM 5,9 W14 Test sheet Edition : 15.11.89

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1100 R381-4

: 0 460 426 156 Type number

Customer-specific information

Customer

: CDC

Engine

: 6 BT-5.9 IND.

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. ., C .

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

bar: 250...253 pressure

Perforated plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840

x Length

Start of delivery

mm : 0.3Prestroke

(from BDC): +0.02(0.04)

Start of delivery block Piston stroke

mm: 1,5 mm: +0,02(0,06)

: D **Outlet**

Injection-pump setting values Test specifications in parentheses

Timing device travel:

1/min: 900 Speed

Setting value mm: 4,2...4,6

Supply-pump pressure:

Speed 1/min: 900

Setting value bar: 4,7...5,3

Full-load del. w/out charge press.:

 $1/\min : 1000$ Speed

Del.quantity cm3/ 1000H.: 67,0...68,0

cm3/: 4.0Dispersion

1000H.: (4,5)

Low-idle speed regulation:

1/min: 400 Speed

Del.quantity cm3/ 1000H.: 11,0...13,0 Dispersion cm3/: 5,5

1000H.: (7,0)

Full-load speed regulation:

1/min: 1150 Speed

Del.quantity cm3/

1000H: 44,3...50,3

Start:

1/min: 100 Speed

Del.quantity cm3/1000H.: 70,0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 750 1st speed

mm: 2,9...3,7 mm: (2,6...4,0) TD travel

1/min: 900 2nd speed

mm: 4,2...4,6 mm: (3,7...5,1) TD travel

1/min: 1100 3rd speed

mm: 5,5...6,3TD travel

mm: (5,2...6,6)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2,9...3,5 pressure

1/min: 750 2nd speed

Supply-pump

bar: 4,0...4,6 1/min: 900 pressure

3rd speed

Supply-pump bar: 4,7...5,3 pressure 1/min: 1100 4th speed Supply-pump bar: 5,5...6,1 pressure Overflow quantity at overflow valve: 1/min: 500 1st speed : 41...83 Oveflow quantity cm3/10s: (26...98) 1/min: 1100 2nd speed : 55...138 Overflow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1/min: 1240 1st speed Del.quantity cm3/: 0,0...3,0 1000H.: -1/min: 1180 2nd speed Del.quantity cm5/: 1000H.: -2nd speed cm3/: 15,0...55,0 1/min: 1150 3rd speed Del.quantity cm3/: 44,3...50,3 1000H.: (41,3...53,3) 1/min: 1100 4th speed Del.quantity cm3/: 64,5...67,5 1000H.: (63,0...69,0) 5th speed 1/min: 1000 Del.quantity cm3/: 67,0...68,0 1000H.: (64,5...70,5) 1/min: 750 6th speed Del.quantity cm3/: 83,0...87,0 1000H.: (81,0...89,0) Zero delivery (stop): Mech. shutoff: 1/min: 1100 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 400 Speed ELAB volt: -Del.quantity cm3/: 0,0...3,0 Idle delivery: 1st speed 1/min: 400 Del.quantity cm3/: 11,0..13,0 1000H.: (7,0...17,0) 1/min: 500 2nd speed Del.quantity cm3/: 0,0...4,0 1000H .: -Automatic starting fuel delivery:

2nd speed 1/min: 250 Del.quantity cm3/: - max. 1000H: 100,0

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : -KF mm : 5,0...5,4 MS mm : 1,3...1,7 SVS max. mm : 2,2

Remarks:

Note inst. in remarks column

Test sheet : CUM 5,9 W15 Edition : 15.11.89

replaces

Calibrating oil : ISO 4113

: VE 6/12F1100 R381-5 Injection pump

: 0 460 426 157 Type number

Customer-specific information

Customer : CDC

: 6 BT-5.9 IND. Engine

k: 94 Power 1/mi: 2100 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. , C .

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250...253 pressure

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke

e mm: 0,3 (from BDC): +-0,02(0,04)

Start of delivery block mm: 1,5 Piston stroke

mm: +0,02(0,06)

Outlet : D

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750 Setting value mm: 3,4...3,8

Supply-pump pressure:

1/min: 750 Speed Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

 $1/\min : 750$

Del.quantity cm3/

1000H.: 64,5...65,5 cm3/: 4,0

Dispersion

1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375

Del.quantity cm3/ 1000H.: 10,0...12,0 Dispersion cm3/: 5,5 1000H.: (7,0)

Full-load speed regulation:

1/min: 1100 Speed

Del.quantity cm3/ 1000H: 46,0...52,0

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 70.0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing device characteristic:

1st speed 1/min: 500

mm: 1,5...2,3 mm: (1,2...2,6) TD travel

1/min: 750 2nd speed

TD travel

mm: 3,4...3,8 mm: (2,9...4,3)

1/min: 1050 3rd speed TD travel

mm: 5,0...5,8mm: (4,7...6,1)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2,4...3,0 1/min: 750 pressure

Supply-pump bar: 3,5...4,1 pressure 3rd speed 1/min: 1050 Supply-pump bar: 4,6...5,2 pressure Overflow quantity at overflow valve: 1/min: 500 1st speed **Oveflow** : 41...83 cm3/10s: (26...98) quantity 1/min: 1050 : 55...138 2nd speed Overflow quantity cm3/10s: (40...153) Delivery quant. and breakaway char .: 1st specu Del.quantity cms/: 0 1000H.: -1/min: 1250 1st speed cm3/: 0.0...3.01/min: 1130 2nd speed cm3/: 15,0...55,0 Del.quantity 1000H .: -1/min: 1100 3rd speed cm3/: 46,0...52,0 Del.quantity 1000H.: (43,0...55,0) 1/min: 1050 4th speed Del.quantity cm3/: 60,5...63,5 1000H:: (59,0...65,0) 1/min: 900 5th speed Del.quantity cm3/: 02,0....67,0) 1/min: 750 óth speed Del.quantity cm3/: 04/3....68,0) 1/min: 500 7th speed Del.quantity cm3/: 64,0...72,0 1000H.: -Zero delivery (stop): Mech. shutoff: Speed 1/min: 1050 Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 375 Speed FLAB. volt: -Del.quantity cm3/: 0,0...3,0 Idle delivery: 1/min: 375 1st speed Del.quantity cm3/: 10,0..12,0 1000H.: (6,0...16,0)

1/min: 500

Del.quantity cm3/: 0,0...4,0 1000H.: -

Automatic starting fuel delivery:

1/min: 130 1st speed Del.quantity cm3/: -1000H: 70,0 ind.

2nd speed 1/min: 350 Del.quantity cm3/: -max. 1000H: 70,0

Shutoff electromagnet:

Cut-in

: 20,0 min. voltage Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K mm KF mm

: 5,0...5,4 MS : 1,2...1,6 mm

Remarks:

2nd speed

Note inst. in remarks column

: PEU 1,7A Test sheet : 09.11.89 Edition : 04.11.87 replaces : ISO 4113 Calibrating oil

: VE 4/ 8F2300 R171 Injection pump Type number : 0 460 484 010

Customer-specific information Customer : PEUGEOT

Engine : XUD7

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. ., C

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening |

pressure bar: 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 x Length mm: 450

Start of delivery Prestroke mm : -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1250 Setting value mm: 3,4...3,8

Supply-pump pressure:

1/min: 1250 Speed Setting value bar: 4,3...4,9

Full-load del. w/out charge press.:

1/min: 1250 Speed

Del.quantity cm3/

1000H.: 28,0...29,0 cm3/: 2,5

Dispersion 1000H.: -

Low-idle speed regulation:

1/min: 375 Speed

Del.quantity cm3/ 1000H.: 8,0...12,0 Dispersion cm3/: 2,0 1000H.: (3,0)

Residual-Delivery Setting 1/min: 550 Speed

Del.quantity cm3/ 1009H.: 3,5...4,5

Full-load speed regulation:

1/min: 2440 Speed

Del.quantity cm3/

1000H: 19,0...25,0

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 42,0 mind

Load-dependent start of delivery:

1/min: 1250 Speed

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800

mm: 0,8...1,6 mm: (0,5...1,9) 1/min: 1250 TD travel

2nd speed

mm: 3,4...3,8TD travel

mm: (3,1...4,1)

1/min: 2000 3rd speed

mm: 7,5...8,3 mm: (7,2...8,6) TD travel

Supply-pump pressure characteristic:

1/min: 800 1st speed

Supply-pump

bar: 3,0...3,6 1/min: 1250 pressure 2nd speed

Supply-pump

bar: 4,3...4,9 1/min: 2000 pressure

3rd speed

High Idle: Supply-pump bar: 6,4...7,0 pressure 1/min: 450 Speed Del.quantity cm3/: 8,0...12,0 1000H.: (6,0...14,0) Overflow quantity at overflow valve: 1/min: 500 1st speed : 41...83 Oveflow Residual: cm3/10s: (26...98) quantity 1/min: 2250 2nd speed 1/min: 550 Speed Del.quantity : 3,5...4,5 1000H.: (2,5...5,5) : 55...138 Overflow quantity cm3/10s: (40...153) Automatic starting fuel delivery: Delivery-quant. and breakaway char.: 1/min: 2690 1/min: 200 1st speed 1st speed Del.quantity cm3/: 4.0...10.0 1000H.: (3,5...10,5) Del.quantity cm3/: -1000H: 34,0 ind. 2nd speed 1/min: 2540
Del.quantity cm3/: 11,5...17,5
1000H.: (10,0...19,0)
3rd speed 1/min: 2440
Del.quantity cm3/: 19,0...25,0
1000H.: (18,0...26,0) 2nd speed 1/min: 300 Del.quantity cm3/: -max. 1000H : 64,0 Shutoff electromagnet: 1/min: 2250 4th speed Del.quantity cm3/: 27,0...29,0 1000H.: (25,7...30,3) 5th speed 1/min: 2000 Del.quantity cm3/: 27,5...29,5 1000H.: (26,2...30,8) Cut-in min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions: 1/min: 1250 6th speed Del.quantity cm3/: 28,U...27,U 1000H.: (26,2...30,8) Designation 3,2...3,4 K mm 7th speed 1/min: 800
Del.quantity cm3/: 28,0...30,0
1000H.: (26,0...32,0) KF mm MS mm : 3,0 : 18,9...20,9 SVS max. mm 1/min: 500 XK mm 8th speed Del.quantity cm3/: 28,0...31,0 : 12,2...15,6 XL 1000H: (26,5...32,5) Remarks: Zero delivery (stop): Mech. shutoff: 1/min: 2250 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 375 Speed ELAB volt: -Del.quantity cm3/: 0,0...3,0 max. 1000H.: -Idle delivery: 1/min: 375 1st speed Del.quantity cm3/: 8,0...12,0 1000H.: (6,0...14,0)

Note inst. in remarks column

: VW 1,4 A Test sheet Edition : 08.11.89

replaces

Calibrating oil : ISO 4113

Injection pump : VE 4 /8F2450 L331-2

: 0 460 484 033 Type number

Customer-specific information

Customer : VW

: 031.2 Engine

TEST BENCH REQUIREMENTS

Calibrating oil return temp. "C

with thermometer: 40...48 : 42...50 electronically

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 000 assembly

Openina

bar: 147...150 pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery Prestroke mm : -

(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250 Setting value mm: 2,8...3,2

Supply-pump pressure:

1/min: 1250 Speed Setting value bar: 4,9...5,5

Full-load del. w/out charge press.:

1/min: 1500 Speed

Del.quantity cm3/

1000H.: 24,3...25,3

Low-idle speed regulation:

Speed 1/min: 425

Del.quantity cm3/ 1000H.: 9,5...11,5

Residual-Delivery Setting 1/min: 575 Speed

Del.quantity cm3/ 1000H.: 2,5...3,5

Full-load speed regulation:

1/min: 2700 Speed

Del.quantity cm3/

1000H: 10,0...14,0

Start:

1/min: 100 Speed

Del.quantity cm3/1000H.: 32,0 mind

Load-dependent start of delivery:

1/min: 1250 Speed

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750

mm: 0,5...1,3 TD travel mm: (0,2...1,6)

1/min: 1250 2nd speed

mm: 2,8...3,2 mm: (2,3...3,7) TD travel

1/min: 2250 3rd speed

mm: 7,3...8,1 TD travel

mm: (7,0...8,4)

Supply-pump pressure characteristic:

1st speed 1/min: 800

Supply-pump

bar: 3,6...4,2 1/min: 1250 pressure

2nd speed Supply-pump

bar: 4,9...5,5 pressure

1/min: 2250 3rd speed

Supply-pump

pressure bar: 7,7...8,3

Overflow quantity at overflow valve:

1/min: 800 1st speed Oveflow : 41...83 cm3/10s: (26...98) quantity 1/min: 2250 2nd speed Overflow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char .: 1/min: 2950 1st speed Del.quantity cm3/: 0,0...6,0 1000H.: -1/min: 2700 cm3/: 10,0...14,0 2nd speed Del.quantity cm3/: 10,0....(8,0...16,0) 1/min: 2575 3rd speed Del.quantity cm3/: 15,0...25,0 1000H.: (14,0...26,0) 4th speed 1/min: 2250 Del.quantity cm3/: 23,0...25,0 1000H.: (21,8...26,2) 1/min: 1500 5th speed Del.quantity cm3/: 24/3...27,0) 1/min: 800 6th speed Del.quantity cm3/: 21,00...24,0 1000H.: (19,5...25,5) 1/min: 600 7th speed Del.quantity cm3/: 17,0...21,0 1000H.: (14,5...24,5) Zero delivery (stop): Electr. shutoff: 1/min: 450 Speed ELAB volt: -Del.quantity cm3/: 0,0...3,0 max. 1000H.: -Idle delivery: 1/min: 425 1st speed Del.quantity cm3/: 9,5...11,5 1000H.: (6,5...14,5) 1/min: 450 2nd speed Del.quantity cm3/: 5,5...8,5 1000H.: (3,0...11,0) Residual: 1/min: 525 Speed Del.quantity : 3,0...5,0 1000H.: (1,5...6,5) Automatic starting fuel delivery:

Del.quantity cm3/: ind. 1000H: 30,0 2nd speed 1/min: 400 Del.quantity cm3/: max. 1000H: 30,0

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

KF mm : 3,2...3,4 KF mm : 5,6...6,0 MS mm : 1,2...1,6

Remarks:

1st speed

1/min: 200

Note inst. in remarks column

Test sheet : PEU 1,7 A2 : 03.11.89 Edition

replaces

: ISO 4113 Calibrating oil

: VE 4/ 8F2300 R171-2 Injection pump

Type number : 0 460 484 034

Customer-specific information Customer : PEUGEOT

: XUD7 Engine

TEST BENCH REQUIREMENTS

Calibrating oil return temp. "C

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening

bar: 130...133 pressure

Test ini. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 mm: 450 x Lenath

Start of delivery Prestroke mm : -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing device travel:

1/min: 1250 Speed Setting value mm: 3,4...3,8

Supply-pump pressure:

1/min: 1250 Setting value bar: 4,3...4,9

Full-load del. w/out charge press.:

1/min: 1250 Speed

Del.quantity cm3/ 1000H.: 28,0...29,0 Dispersion cm3/: 2,0

1000H.: (2,5)

Low-idle speed regulation:

1/min: 375 Speed

Del.quantity cm3/ 1000<u>H</u>.: 8,0...12,0 cm3/: 2,0 Dispersion

1000H.:

Residual-Delivery Setting Speed 1/min: 550

Del.quantity cm3/

1000H.: 3,5...4,5

Full-load speed regulation:

Speed 1/min: 2440

Del.quantity cm3/ 1000H: 19,0...25,0

Start:

1/min: 100 Speed Del.quantity

cm3/1000H.: 42,0 mind i

Load-dependent start of delivery:

1/min: 1250 Speed

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 800 1st speed

TD travel mm: 0,8...1,6mm: (0,5...1,9)

1/min: 1250 2nd speed

TD travel mm: 3,4...3,8mm: (3,1...4,1)

3rd speed

1/min: 2000 mm: 7,,5...8,3 mm: (7,2...8,6) TD travel

Supply-pump pressure characteristic:

1/min: 800 1st speed Supply-pump

bar: 3,0...3,6 1/min: 1250 pressure 2nd speed

Supply-pump

bar: 4,3...4,9 pressure

1/min: 2000 3rd speed

High Idle: Supply-pump bar: 6,4...7,0 pressure 1/min: 450 Speed Del.quantity cm3/: 8,0...12,0 1000H.: (6,0...14,0) Overflow quantity at overflow valve: 1/min: 500 1st speed : 41...83 Residual: Oveflow cm3/10s: (26...98) quantity 1/min: 2250 1/min: 550 2nd speed Speed : 55...138 Del.quantity : 3,5...4,5 1000H.: (2,5...5,5) Overflow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: Automatic starting fuel delivery: 1/min: 200 1/min: 2650 1st speed 1st speed Del.quantity cm3/: 3,5...10,5 1000H.: -Del.quantity cm3/: -1000H: 34,0 ind. 2nd speed 1/min: 2540
Del.quantity cm3/: 11,5...17,5
1000H.: (10,0...19,0)
3rd speed 1/min: 2440
Del.quantity cm3/: 19,0...25,0
1000H.: (18,0...26,0) 1/min: 300 2nd speed Del.quantity cm3/: -max. 1000H: 64,0 Shutoff electromagnet: 4th speed 1/min: 2250
Del.quantity cm3/: 27,5...29,5
1000H.: (26,2...30,8) Cut-in : 10,0 min. voltage 1/min: 2000 Rated voltage 5th speed Del.quantity cm3/: 27,5...29,5 1000H.: (26,2...30,8) Mounting and assembly dimensions: 1/min: 1250 6th speed Del.quantity cm3/: 28,0...29,0 1000H.: (26,2...30,8) Designation mm KF 1/min: 800 7th speed mm Del.quantity cm3/: 28,0...30,0 1000H.: (26,0...32,0) MS XK : 18,7...20,7 1/min: 500 XL 8th speed mm Del.quantity cm3/: 28,0...31,0 1000H: (26,5...32,5) Remarks: Zero delivery (stop): Mech. shutoff: 1/min: 2250 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: Speed 1/min: 375 ELAB volt: -Del.quantity cm3/: 0,0...3,0 max. 1000H.: -Idle delivery:

Note inst. in remarks column

: VWW 1,7A : 02.11.89 Test sheet Edition : 10.12.86 replaces : ISO 4113 Calibrating oil

Injection pump : VE 4/ 9F2250 R187 : 0 460 494 164 Type number

Customer-specific information

Customer : VWW

Engine : 086

TEST BENCH REQUIREMENTS

Calibrating-oil

return temp. ., C . with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening

bar: 147...150 pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery Prestroke mm: -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1500 Setting value mm: 4,3...4,7

Supply-pump pressure:

Speed 1/min: 1500 Setting value bar: 4,8...5,4

Full-load del. w/out charge press.:

1/min : 1500 Speed

Del.quantity cm3/

1000H.: 34,5...35,5 cm3/: 2,5

Dispersion

1000H.: (3,0)

Low-idle speed regulation:

1/min: 450 Speed

Del.quantity cm3/ 1000<u>H</u>.: 6,0...10,0

cm3/: 2.0Dispersion

1000H.: (3,0)

Full-load speed regulation:

1/min: 2450 Speed

Del.quantity cm3/ 1000H: 12,0...18,0

Start:

1/min: 100 Speed Del.quantity mind cm3/1000H.: 35,0

Inspection pump test specifications Test specifications in parentheses

Timing device characteristic:

1/min: 1000 1st speed

mm: 2,1...2,9 mm: (1,8...3,2) TD travel

2nd speed 1/min: 1500

mm: 4,3...4,7 mm: (3,8...5,2) 1/min: 2250 TD travel

3rd speed

TD travel mm: $7_24...8_2$ mm: (7,1...8,5)

Supply-pump pressure characteristic:

1/min: 600 1st speed

Supply-pump

bar: 2,5...3,1 1/min: 1500 pressure

2nd speed

Supply-pump

bar: 4,8...5,4 1/min: 2250 pressure

3rd speed

Supply-pump

bar: 6,7...7,3 pressure

Overflow quantity at overflow valve:

1/min: 600 1st speed : 41...83 Oveflow

quantity cm3/10s: (26...98) 1/min: 2250 2nd speed

Overflow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1/min: 2600 1st speed Del.quantity cm3/: 0,0...6,0 1000H.: -2nd speed 1/min: 2450
Del.quantity cm3/: 12,0...18,0
1000H.: (11,0...19,0) 1/min: 2400 3rd speed Del.quantity cm3/: 17,0...27,0 1000H.: (16,0...28,0) 4th speed 1/min: 2250
Del.quantity cm3/: 30,5...32,5
1000H.: (29,3...33,7) 5th speed 1/min: 1500 Del.quantity cm3/: 34,5...35,5 1000H.: (32,8...37,2) 6th speed 1/min: 600 Del.quantity cm3/: 24,0...27,0 1000H.: (22,5...28,5) Zero delivery (stop): Electr. shutoff: 1/min: 450 Speed ELAB volt: -Del.quantity cm3/: 0,0...3,0 max. 1000H.: -Idle delivery: 1/min: 450 1st speed Del.quantity cm3/: 6,0...10,0 1000H.: (4,0...12,0) 1/min: 1200 2nd speed Del.quantity cm3/: 0,0...4,0 1000H.: — Automatic starting fuel delivery: 1st speed 1/min: 360 Del.quantity cm3/: -1000H: 35,0 ind. 2nd speed 1/min: 560 Del.quantity cm3/: -1000H: 35,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 : 12,0 Rated voltage

Designation
K mm : 3,2...3,4
KF mm : 5,7...6,0
MS mm : 1,3...1,5
SVS max. mm : 4,8

Remarks:

Mounting and assembly dimensions:

Note inst. in remarks column

: VMA 2,0F Test sheet : 02.11.89 Edition : 03.08.88 replaces Calibrating oil : ISO 4113

: VE 4/ 9F2150 L202 Injection pump : 0 460 494 167 Type number

Customer-specific information

Customer : VM

: HR 488 HJ Engine

TEST BENCH REQUIREMENTS

Calibrating oil return temp. "C

with thermometer: 40...48 electronically

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

bar: 147...150 pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery Prestroke mm: -(from BDC): -

Indicator setting:

Piston stroke mm: 1.0 Outlet : A

Injection pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1000 Charge press. hPa: 800 Setting value mm: 1,5...1,9

Supply-pump pressure:

1/min: 1500 Speed Charge press. hPa: 800 Setting value bar: 4,5...5,1

Full-load del. with charge press.:

1/min: 1500 Speed Charge press. hPa: 800

Del.quantity cm3/ 1000H.: 52,5...53,5 Dispersion cm3/: 3,0 1000H: (3,0)

Full-load del. w/out charge press.:

 $1/\min : 750$ Speed

Del.quantity cm3/ 1000H.: 39,5...40,5

Low-idle speed regulation:

Speed 1/min: 400

Del.quantity cm3/ 1000H.: 11,0...15,0 Dispersion cm3/: 2,5 1000H.: (2,5)

Full-load speed regulation:

Speed 1/min: 2420 Charge press. hPa: 800

Del.quantity cm3/

1000H: 12,0...18,0

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 36,0 mind

Load-dependent start of delivery:

1/min: 1500 Speed Charge press. hPa: -

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000 Charge press. hPa: 800 mm: 1,3...2,1 mm: (1,0...2,4) TD travel

1/min: 1500 2nd speed

Charge press. hPa: 800 mm: 4,3...4,7 mm: (3,8...5,2) 1/min: 2150 TD travel

3rd speed

at 1 = 000	1 21 21 21 21 21 21 21 21 21 21 21 21 21
Charge press. hPa: 800 TD travel mm: 7,68,4	+ Del.quantity cm3/: 51,554,5 + 1000H.: -
mm: (7,38,7)	7th speed 1/min: 750
WENT 11,701115/17	1. Charge proce hPar 400
Supply-pump pressure characteristic:	+ Del.quantity cm3/: 41,543,5
4	Del.quantity cm3/: 41,543,5 1000H.: (40,045,0) 8th speed 1/min: 750
1st speed 1/min: 750	+ 8th speed 1/min: 750 + Del.quantity cm3/: 39,540,5
Charge press. hPa: 800 Supply-pump	1000H: (37,542,5)
pressure bar: 2,02,6	1 (31/3:::42/3)
2nd speed 1/min: 1000	<pre>Zero delivery (stop):</pre>
Charge press. hPa: 800	+
Supply-pump	† Electr. shutoff:
pressure bar: 2,83,4 3rd speed 1/min: 1500	I Electr. silutori:
Charge press. hPa: 800	1/min: 400
Supply-pump	+ ELAB volt: -
pressure bar: 4,55,1 4th speed 1/min: 2150	+ Del.quantity_cm3/: 0,03,0
4th speed 1/min: 2150	+ max. 1000H.: −
Charge press. hPa: 800 Supply-pump	Idle delivery:
pressure bar: 6,77,3	Take actively.
p. 5550. 5	1st speed 1/min: 400
Overflow quantity at overflow valve:	Del.quantity cm3/: 11,015,0 1000H.: (8,018,0) 2nd speed 1/min: 500
4-1-2-20	1000H.: (8,018,0)
1st speed 1/min: 750 Charge press, hPa: 800	T and speed 1/min: 500
Oveflow : 4183	Del.quantity cm3/: 2,08.0 1000H.: (0,010,0)
quantity cm3/10s: (2698)	+ 3rd speed 1/min: 700
2nd speed 1/min: 2150	+ Del.quantity cm3/: 0,04,0 + 1000H.: (0,04,0)
Charge press. hPa: 800 Overflow : 55138	† 1000H.: (0,04,0)
quantity cm3/10s: (40153)	Automatic starting fuel delivery:
quality of the total sor	+
Delivery-quant. and breakaway char.:	+ 1st speed 1/min: 400
1nt and 1/min 750	+ Del.quantity cm3/: -
1st speed 1/min: 750 Charge-air pressure-setting	† ind. 1000H: 37,0
point hPa: 400	2nd speed 1/min: 500
LUA STroke mm: 5,7	Del.quantity cm3/: - max. 1000H : 45,0
Del.quantity_cm3/: 41,543,5	† max. 1000H: 45,0
1000H.: (40,045,0)	+ Shutoff electromagnet:
2nd speed 1/min: 2550 Charge press. hPa: 800	T Silutori etectionagnet.
Del.quantity cm3/: 0,02,0	↓ Cut-in
1000H.: -	+ min. voltage : 10,0
3rd speed 1/min: 2420	+ Rated voltage : 12,0
Charge press. hPa: 800 Del.quantity cm3/: 12,018,0	Mounting and assembly dimensions:
1000H.: (11,019,0)	Designation K mm : 3,23,4 KF mm : 5,35,7 MS mm : 0,61,0 SVS max. mm : 1,7 XK mm : 17,019,0 XL mm : 8,812,2
4th speed 1/min: 2150	<pre>Designation</pre>
Charge press. hPa: 800	+ K mm : 3,23,4
Del.quantity cm3/: 42,345,3	+ KF mm : 5,35,7
1000H.: (41,646,0) 5th speed 1/min: 1500	+ MS mm : 0,61,0 + SVS max. mm : 1,7
Charge press. hPa: 800	XK mm : 17,019,0
Del.quantity cm3/: 52,553,5	+ XL mm : 8,812,2
1000H.: (51,055,0)	Barranta
6th speed 1/min: 750	Remarks:
Charge press. hPa: 800	Τ

* Correction at adjusting nut (46)

Note inst. in remarks column

Test sheet : VWW 1,6 W17 : 03.11.89 : 08.12.86 Edition replaces : ISO 4113 Calibrating oil

: VE 4/ 9F2400 R221 Injection pump : 0 460 494 179 Type number

Customer-specific information

Customer : W

Engine : 086

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. "C.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening

bar: 147...150 pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery Prestroke mm : -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1000 Setting value mm: 1,0...1,8

Supply-pump pressure:

1/min: 600 beea Setting value bar: 2,1...2,7

Full-load del. w/out charge press.:

1/min: 1500 Speed

Del.quantity cm3/

1000H.: 31,5...32,5 cm3/: 2,5

Dispersion 1000H.: (3,0)

Low-idle speed regulation:

1/min: 375 Speed

Del.quantity cm3/

1000H.: 11,0...13,0 cm3/: 2,0Dispersion

1000H.: (3,0) Residual-Delivery Setting

Speed 1/min: 550

Del.quantity cm3/

1000H.: 2,5...3,5

Full-load speed regulation:

1/min: 2600 Speed

Del.quantity cm3/

1000H: 12,0...16,0

Start:

Speed 1/min: 100 Del.quantity mind cm3/1000H.: 35,0

Load-dependent start of delivery:

1/min: 1250 Speed

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 1000 1st speed

TD travel mm: 1,0...1,8mm: (0,7...2,1)

1/min: 1250 2nd speed TD travel

mm: 2,1...2,5 mm: (1,6...3,0)

1/min: 1800 3rd speed

mm: 4,2...5,0 mm: (3,9...5,3) TD travel

1/min: 2400 4th speed TD travel

mm: 6,1...6,9 mm: (5,8...7,2)

Supply-pump pressure characteristic:

1/min: 600 1st speed

Supply-pump

bar: 2,1...2,7 1/min: 1250 pressure 2nd speed

Supply-pump pressure 3rd speed Supply-pump

bar: 4,0...4,6

1/min: 2400

bar: 7,3...7,9 pressure

Overflow quantity at overflow valve:

1st speed 1/min: 600 : 41...83 Oveflow cm3/10s: (26...98) quantity

1/min: 2400 2nd speed

: 55...138 Overflow quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char .:

1/min: 2800 1st speed

cm3/: 0.0...4.0Del.quantity

1000H .: -

1/min: 2600 2nd speed

Del.quantity cm3/: 12,0...16,0 1000H.: (10,0...18,0) 3rd speed 1/min: 2500 Del.quantity cm3/: 19,0...29,0 1000H.: (18,0...30,0) 4th speed 1/min: 2400

Del.quantity cm3/: 27,0...29,0 1000H.: (25,8...30,2)

1/min: 1500 5th speed

Del.quantity cm3/: 31,5...32,5 1000H.: (29,8...34,2)

6th speed 1/min: 600 Del.quantity cm3/: 21,5...24,5 1000H.: (20,0...26,0)

Zero delivery (stop):

Electr. shutoff:

1/min: 425 Speed ELAB volt: -

Del.quantity cm3/: 0,0...3,0

1000H.: -

Idle delivery:

1st speed

1/min: 375 cm3/: 11,0..13,0 1000H.: (8,0...16,0) 1/min: 425 Del.quantity

2nd speed

Del.quantity cm3/: 5,5...8,5 1000H.: (3,0...11,0)

High Idle:

Speed 1/min: 525 Del.quantity cm3/: 7,0...9,0

1000H.: (4,0...12,0)

Residual:

1/min: 500 Speed

2,5...4,5 1000H.: (1,0...6,0) Del.quantity

Automatic starting fuel delivery:

1/min: 180 1st speed Del.quantity cm3/: -

1000H: 35,0 ind.

1/min: 380 2nd speed Del.quantity cm3/: -max. 1000H: 30,0

Shutoff electromagnet:

Cut-in

: 10,0 min. voltage Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

: 3,2...3,4 : 5,7...6,0 : 1,3...1,5 : 17,0...19,0 : 9,8...13,2 K KF MS XK mm XL man

Remarks:

Note inst. in remarks column

: FIA 1,7 P1 Test sheet : 06.11.89 : 18.12.86 : ISO 4113 Edition replaces Calibrating oil

: VE 4/ 9F2400 R242 Injection pump

: 0 460 494 193 Type number

Customer-specific information

Customer : FIAT

: X8/57 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. , C .

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening |

bar: 130...133 pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 450 x Length

Start of delivery Prestroke mm: -(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500 Charge press. hPa: 1000 Setting value mm: 4,9...5,3

Supply-pump pressure:

1/min: 1500 Speed Charge press. hPa: 1000 Setting value bar: 5,5...6,1 Full-load del. with charge press.:

1/min: 1500 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H: 35,5...36,5 Dispersion cm3/: 3,0 1000H: -

Full-load del. w/out charge press.:

 $1/\min : 750$

Del.quantity cm3/

1000H.: 25,3...26,3

Low-idle speed regulation:

1/min: 400 Speed Del.quantity cm3/

1000H.: 4,0...8,0 cm3/: 3,0 Dispersion

1000H.: -

Full-load speed regulation:

1/min: 2650 Speed Charge press. hPa: 1000 Del.quantity cm3/ 1000H: 17,0...23,0

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 48,0 mind

Load-dependent start of delivery:

1/min: 1500 Speed Charge press. hPa: -

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 750 1st speed Charge press. hPa: 1000 mm: 1,3...2,1 mm: (1,0...2,4) TD travel

2nd speed 1/min: 1500 hPa: 1000 Charge press. TD travel

mm: 4,9...5,3 mm: (4,4...5,8) 1/min: 2000

3rd speed Charge press. hPa: 1000

mm: 6,9...7,5 mm: (6,5...7,9) 1/min: 2400 TD travel

4th speed

Charge press. hPa: 1000 TD travel mm: 8,59,3 mm: (8,29,6)	Del.quantity cm3/: 35,536,5 1000H.: (33,738,3) 7th speed 1/min: 1100 Charge press. hPa: -
Supply-pump pressure characteristic:	Del.quantity cm3/: 24,027,0
1st speed 1/min: 750 Charge press. hPa: 1000 Supply-pump pressure bar: 3,64,2	8th speed 1/min: 1100 Charge press. hPa: 400 Del.quantity cm3/: 29,530,5 1000H: (27,033,0)
2nd speed 1/min: 1500 Charge press. hPa: 1000 Supply-pump pressure bar: 5,56,1	+ 9th speed 1/min: 750 - Charge press. hPa: - - Del.quantity cm3/: 25,326,3 - 1000H: (22,828,8)
3rd speed 1/min: 2000 Charge press. hPa: 1000 Supply-pump	Zero delivery (stop):
pressure bar: 6,57,1 4th speed 1/min: 2400 Charge press. hPa: 1000 Supply-pump	Electr. shutoff: Speed 1/min: 400
pressure bar: 7,68,2 Overflow quantity at overflow valve:	ELAB volt: - - Del.quantity cm3/: 0,03,0 - max. 1000H.: -
1st speed 1/min: 750	Idle delivery:
Charge press. hPa: - Oveflow: 4183 quantity cm3/10s: (2698)	+ 1st speed 1/min: 400
2nd speed 1/min: 2400 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153)	Del.quantity cm3/: 4,08,0 1000H.: (2,010,0) 2nd speed 1/min: 350 Del.quantity cm3/: 12,517,5 1000H.: -
Delivery-quant. and breakaway char.:	3rd speed 1/min: 520 Del.quantity cm3/: 0,03,0 1000H.: -
1st speed 1/min: 1100 Charge-air pressure-setting point hPa: 400	Automatic starting fuel delivery:
LDA stroke mm: 6,6 Del.quantity cm3/: 29,530,5 1000H.: (27,033,0) 2nd speed 1/min: 2950	+ 1st speed 1/min: 250 + Del.quantity cm3/: - + ind. 1000H: 38,0
Charge press. hPa: 1000 Del.quantity cm3/: 0,03,0 1000H.: -	2nd speed 1/min: 350 Del.quantity cm3/: - max. 1000H: 34,0
3rd speed 1/min: 2850 Charge press. hPa: 1000 Del.quantity cm3/: 0,06,0 1000H.: -	Shutoff electromagnet: Cut-in
4th speed 1/min: 2650 Charge press. hPa: 1000 Del.quantity cm3/: 17,023,0	min. voltage : 10,0 Rated voltage : 12,0
1000H.: (16,024,0) 5th speed	Mounting and assembly dimensions:Designation
Del.quantity cm3/: 36,539,5 1000H.: (35,740,3) 6th speed 1/min: 1500	+ K mm : 3,23,4 + KF mm : 5,76,0 + MS mm : 1,41,65
Charge press. hPa: 1000	+ SVS max. mm : -

XK XL mm : 17,0...19,0 mm : 9,1...12,5

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

Note inst. in remarks column

: PEU 1,9 K5 Test sheet : 06.11.89 Edition

replaces

: ISO 4113 Calibrating oil

Injection pump : VE 4/ 9F2300 R272-1

Type number : 0 460 494 222

Customer-specific information Customer : PEUGEOT

Engine : XUD9A

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. , C .

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

pressure bar: 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 mm: 450 x Length

Start of delivery Prestroke mm: -(from BDC): -

Indicator setting: Piston stroke mm: 0.3 Outlet

Injection pump setting values Test specifications in parentheses

Timing device travel:

Speed 1/min: 1250 Setting value mm: 3,0...3,4

Supply-pump pressure:

Speed 1/min: 1250 Setting value bar: 3,9...4,5

Full-load del. w/out charge press.:

1/min : 1250

Del.quantity cm3/

1000H.: 30,3...31,3 cm3/: 2,5

Dispersion

1000H.: -

Low-idle speed regulation:

1/min: 375 Speed

Del.quantity cm3/ 1000H.: 8,0...10,0 Dispersion cm3/: 2,5 1000H.: -

Residual-Delivery Setting Speed 1/min: 550

Del.quantity cm3/ 1000H.: 0,0...6,0

Full-load speed regulation:

Speed 1/min: 2500

Del.quantity cm3/

1000H: 19,0...25,0

Start:

Speed 1/min: 100

Del.quantity cm3/1000H.: 45,0 mind

Load-dependent start of delivery:

Speed 1/min: 1250

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 800 1st speed

mm: 0,6...1,4mm: (0,3...1,7)TD travel

1/min: 1250 2nd speed

TD travel

mm: 3,0...3,4 mm: (2,7...3,7) 1/min: 2000 3rd speed

mm: 6,7...7,5 mm: (6,4...7,8) TD travel

Supply-pump pressure characteristic:

1/min: 800 1st speed

Supply-pump

pressure bar: 2,6...3,2

1/min: 1250 2nd speed

K19

Supply-pump bar: 3,9...4,5 pressure 1/min: 2000 3rd speed Supply-pump bar: 5,9...6,5 pressure Overflow quantity at overflow valve: 1/min: 500 1st speed : 41...83 Oveflow quantity cm3/10s: (26...98) 1/min: 2250 : 55...138 2nd speed Overflow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1/min: 2650 1st speed Del.quantity cm3/: 0,0...10,0 1000H.: -2nd speed 1/min: 2500 Del.quantity cm3/: 19,0...25,0 1000H.: (18,0...26,0) 1/min: 2250 3rd speed Del.quantity cm3/: 32,3...35,3 1000H.: (31,5...36,1) 1/min: 1250 4th speed Del.quantity cm3/: 30,3...31,3 1000H.: (28,5...33,1) 1/min: 800 5th speed Del.quantity cm3/: 31,3...34,3 1000H.: (30,3...35,3) 1/min: 500 6th speed Del.quantity cm3/: 31,3...34,3 1000H.: (30,3...35,3) Zero delivery (stop): Idle delivery: 1/min: 375 1st speed Del.quantity cm3/: 8,0...10,0 1000H.: (5,0...13,0) High Idle: Speed 1/min: 470 Del.quantity cm3/: 8,0...10,0 1000H.: (5,0...13,0) Residual: 1/min: 550 Speed

: 2,5...3,5

1000H.: (0,0...6,0)

Automatic starting fuel delivery:

1/min: 200

Del.quantity cm3/: -ind. 1000H: 40,0 2nd speed 1/min: 300 Del.quantity cm3/: -max. 1000H: 35,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation : 3,2...3,4 : 5,3...5,7 : 1,2...1,6 K nen KF MS mm Remarks:

Del.quantity

1st speed

Note inst. in remarks column

: OPE 1,7 A : 09.11.89 Test sheet Edition : 16.01.89 replaces Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2300 R313 : 0 460 494 229 Type number

Customer-specific information

Customer

: OPEL

Engine

: 17 YD

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. "C

with thermometer: 40...48 : 42...50 electronically

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 000 assembly

Openina

bar: 147...150 pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Lenath

Start of delivery Prestroke mm : -(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1000 Setting value mm: 2,0...2,4 KSB solenoid-operated volt: 12,0 valve

Supply-pump pressure:

1/min: 1000 Setting value bar: 4,0...4,6 KSB solenoid-operated volt: 12,0 valve

Full-load del. w/out charge press.:

1/min: 1300 Speed

Del.quantity cm3/ 1000H.: 31,1...32,1

KSB solenoid-operated volt: 12,0 cm3/: 2,5 1000H.: (2,5) valve Dispersion

Low-idle speed regulation:

1/min: 400

Del.quantity cm3/ 1000H.: 8,5...12,5

KSB solenoid-operated

volt: 12,0 cm3/: 2,5 valve Dispersion 1000H.: (2,5)

Residual-Delivery Setting Speed 1/min: 500

Del.quantity cm3/ 1000H.: 1,5...2,5

KSB-Solenoid-Operated Volt : 12,0 cm3/: 3,0 valve Dispersion 1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2575

Del.quantity cm3/

1000H: 18,5...24,5

KSB solenoid-operated volt: 12,0 valve

Start:

Speed 1/min: 100

: 28,0...48,0 Del.quantity

cm3/1000H.: mind KSB solenoid-operated volt: 12,0 valve

Load-dependent start of delivery:

1/min: 1000 Speed

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 300

TD travel mm: 0,8...3,2

mm: -

KSB solenoid-operated -	KSB solenoid-operated
valve volt: -	valve volt: 12,0
2nd speed 1/min: 800	Overflow : 55138
TD travel mm: 1,94,3 mm: -	quantity cm3/10s: (40153)
KSB solenoid-operated	Delivery-quant. and breakaway char.:
valve volt: -	
valve volt: - 3rd speed 1/min: 1000	1st speed
TD travel mm: 1,94,3	KSB solenoid-operated
mm: —	valve volt: 12,0
KSB solenoid-operated -	Del.quantity cm3/: 7,011,0
valve volt: -	1000H.: (5,013,0)
4th speed 1/min: 800	2nd speed 1/min: 2575
TD travel mm: 0,91,7	KSB solenoid-operated
mm: (0,62,0)	valve volt: 12,0
KSB solencid-operated -	Del quantity cm3/: 18.524.5
valve volt: 12,0	Del.quantity cm3/: 18,524,5
5th speed 1/min: 1000	3rd speed 1/min: 2300
TD travel mm: 2,02.4	KSB solenoid-operated
mm: (1,52,9)	valve volt: 12 f
KSB solenoid-operated	valve volt: 12,0 Del.quantity cm3/: 27,930,5
valve volt: 12,0	1000H.: (26,931,5)
6th speed 1/min: 2000	4th speed 1/min: 2000
Th trouble 42 70	
TD travel mm: 6,27,0	KSB solenoid-operated
mm: -	valve volt: 12,0
KSB solenoid-operated	Del.quantity cm3/: 27,129,7
valve volt: 12,0	1000H.: (26,130,7)
1-h 1/ 2700	5th speed 1/min: 1300
1st speed 1/min: 2300 -	KSB solenoid-operated
TD travel mm: 7,58,3	valve volt: 12,0
mm: (7,28,6)	Del.quantity cm3/: 31,132,1
KSB solenoid-operated	1000H.: (29,333,9)
valve volt: 12,0	- 6th speed 1/min: 700
	KSB solenoid-operated
Supply-pump pressure characteristic:	valve volt: 12,0
	- Del.quantity cm3/: 24,527,5
1st speed 1/min: 800	- 1000H.: (23,029,0)
Supply-pump	,
pressure bar: 3,44,0	- Zero delivery (stop):
KSB solenoid-operated -	
valve volt: 12,0	-
2nd speed 1/min: 1000	- Electr. shutoff:
Supply-pump +	-
pressure bar: 4,04,6	- Speed 1/min: 400
KSB solenoid-operated	- ELAB volt: -
valve volt: 12,0	- Del.quantity_cm3/: 0,03,0
3rd speed 1/min: 2300	- max. 1000H.: -
Supply-pump	-
pressure bar: 7,68,2	- Idle delivery:
KSB solenoid-operated	<u> </u>
valve volt: 12,0	- 1st speed 1/min: 400
·	- KSB solenoid-operated
Overflow quantity at overflow valve:	- valve volt: 12,0
· · · · · · · · · · · · · · · · · · ·	- valve volt: 12,0 - Del.quantity cm3/: 8,512,5
1st speed 1/min: 700	- 1000H.: (6,514,5)
KSB solenoid-operated	-
valve volt: 12,0	- Residual:
Oveflow : 4183	
quantity cm3/10s: (2698)	- Speed 1/min: 750
2nd speed 1/min: 2300	- Market - M

Del.quantity : 0,0...1,6

KSB-Solenoid-operated valve Volt: 12,0

Automatic starting fuel delivery:

1/min: 400 1st speed KSB solenoid-operated volt: 12,0 valve Del.quantity cm3/: -ind. 1000H: 25,0

2nd speed 1/min: 500 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: -max. 1000H: 32,5

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

: 3,2...3,4 : 5,3...5,7 : 0,5...0,9 : 16,1...18,1 : 11,0...14,4 Κ mm KF MS mm XK mm XL

Remarks:

Note inst. in remarks column

: OPE 1,7 B : 09.11.89 Test sheet Edition : 16.01.89 replaces

: ISO 4113 Calibrating oil

: VE 4/ 9F2300 R313-1 Injection pump

: 0 460 494 230 Type number

Customer-specific information

Customer

: OPEL

Engine

: 17 YD

TEST BENCH REQUIREMENTS

Calibrating oil

return temp. , C with thermometer: 40...48

electronically

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening |

bar: 147...150 pressure

Test ini. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840

x Length

Start of delivery Prestroke mm : -

Injection pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1500 Setting value mm: 4,2...4,6

(from BDC): -

KSB solenoid-operated

volt: 12,0 valve

Supply-pump pressure:

1/min: 1500 Setting value bar: 5,4...6,0 KSB solenoid-operated valve volt: 12,0

Full-load del. w/out charge press.:

1/min: 1300 Speed

Del.quantity cm3/ 1000H.: 31,1...32,1

KSB solenoid-operated volt: 12,0 cm3/: 2,5 1000H.: (2,5) valve Dispersion

Low-idle speed regulation:

1/min: 400

Del.quantity cm3/ 1000H.: 7,0...11,0

KSB solenoid-operated volt: 12,0 cm3/: 2,5 valve Dispersion

1000H.: (2,5)

Full-load speed regulation:

Speed 1/min: 2575

Del.quantity cm3/

1000H: 18,5...24,5

KSB solenoid-operated volt: 12,0 valve

Start:

1/min: 100 Speed

Del.quantity cm3/1000H.: 26,0 mind KSB solenoid-operated

valve volt: 12,0

Load-dependent start of delivery:

1/min: 1500 Speed

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 300

TD travel mm: 0.8...3.2

mm: -

KSB solenoid-operated valve volt: -

1/min: 800 2nd speed TD travel

mm: 1,9...4,3

mm: -

KSB solenoid-operated valve volt: -1/min: 1000 3rd speed

TD travel mm: 1,94,3	1	KSB solenoid-operated
	L	valve volt: 12,0
mm: -	T	Valve VULL. 12,0
KSB solenoid-operated	+	Deliquantity cm3/: / UII_U
valve volt: -	+	Del.quantity cm3/: 7,011,0 1000H.: (5,013,0) 2nd speed 1/min: 2575
4th speed 1/min: 800		2nd speed 1/min: 2575
To be seed 1/11/11: 000	1	MCD palament appropriat
TD travel mm: $0,91,7$	1	KSB solenoid-operated
mm: (0,62,0)	+	valve volt: 12,0
KSB solenoid-operated	+	Del.quantity cm3/: 18,524,5 1000H.: -
valve volt: 12,0	1	1000H · -
	T	7-d amond 4/min 2700
5th speed 1/min: 1500	+	3rd speed 1/min: 2300
TD travel mm: 4,24,6	+	KSB solenoid-operated
TD travel mm: 4,24,6 mm: (3,94,9)	1	valve volt: 12,0
KSB solenoid-operated	1	Del.quantity cm3/: 27,930,5
	T	4000u - (27 2 - 74 2)
valve volt: 12,0	+	1000H.: (27,231,2)
6th speed 1/min: 2000	+	4th speed 1/min: 2000
TD travel mm: 6,27,0	1	KSB solenoid-operated
	1	valve val+: 12 0
mm: -	T	valve volt: 12,0 Del.quantity cm3/: 27,129,7 1000H.: -
KSB solenoid-operated	†	Deliquantity cm3/: 2/,129,/
valve volt: 12,0	+	1000H.: -
•	1	5th speed 1/min: 1300
1st speed 1/min 2700		
1st speed 1/min: 2300	Ť	KSB solenoid-operated
TD travel mm: 7,58,3	+	valve volt: 12,0
mm: (7,28,6)	+	Del.quantity cm3/: 31,132,1
KSB solenoid-operated	1	1000H · (29.6 33.6)
		1000H.: (29,633,6) 6th speed 1/min: 700
valve volt: 12,0	+	6th speed 1/min: 700
	+	KSB solenoid-operated
Supply-pump pressure characteristic:	+	valve volt: 12,0
copper, bonds by coods a construction	1	Del.quantity cm3/: 24,527,5
4.1	Ţ	4000U . (27 7 20 7)
1st speed 1/min: 800	†	1000H.: (23,728,3)
Supply-pump		
Supply pulls	7	
pressure har: 3.44.0	I	Zero delivery (stop):
pressure bar: 3,44,0	Ŧ	Zero delivery (stop):
pressure bar: 3,44,0 KSB solenoid-operated	Ŧ	Zero delivery (stop):
pressure bar: 3,44,0 KSB solenoid-operated valve volt: 12,0	T + +	·
pressure bar: 3,44,0 KSB solenoid-operated valve volt: 12,0	† † † †	Zero delivery (stop): Electr. shutoff:
pressure bar: 3,44,0 KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500	† † †	·
pressure bar: 3,44,0 KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump	† † † †	Electr. shutoff:
pressure bar: 3,44,0 KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,46,0	+++++	Electr. shutoff: Speed 1/min: 400
pressure bar: 3,44,0 KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,46,0 KSB solenoid-operated	* + + + + + + + + + + + + + + + + + + +	Electr. shutoff: Speed 1/min: 400 ELAB volt: -
pressure bar: 3,44,0 KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,46,0 KSB solenoid-operated valve volt: 12,0	* + + + + + + + + + + + + + + + + + + +	Electr. shutoff: Speed 1/min: 400 ELAB volt: -
pressure bar: 3,44,0 KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,46,0 KSB solenoid-operated valve volt: 12,0	* + + + + + + + + + + + + + + + + + + +	Electr. shutoff: Speed 1/min: 400 ELAB volt: - Del.quantity cm3/: 0,03,0
pressure bar: 3,44,0 KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,46,0 KSB solenoid-operated valve volt: 12,0 3rd speed 1/min: 2300	*	Electr. shutoff: Speed 1/min: 400 ELAB volt: -
pressure bar: 3,44,0 KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,46,0 KSB solenoid-operated valve volt: 12,0 3rd speed 1/min: 2300 Supply-pump	*	Electr. shutoff: Speed 1/min: 400 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: -
pressure bar: 3,44,0 KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,46,0 KSB solenoid-operated valve volt: 12,0 3rd speed 1/min: 2300	* 	Electr. shutoff: Speed 1/min: 400 ELAB volt: - Del.quantity cm3/: 0,03,0
pressure bar: 3,44,0 KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,46,0 KSB solenoid-operated valve volt: 12,0 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,68,2	* + + + + + + + + + + + + + + + + + + +	Electr. shutoff: Speed 1/min: 400 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: -
pressure bar: 3,44,0 KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,46,0 KSB solenoid-operated valve volt: 12,0 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,68,2 KSB solenoid-operated	, , , , , , , , , , , , , , , , , , , 	Electr. shutoff: Speed 1/min: 400 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: - Idle delivery:
pressure bar: 3,44,0 KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,46,0 KSB solenoid-operated valve volt: 12,0 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,68,2	╏╸┩╸┩╸┩╸┩╸┩╸┩╸┩╸┩╸┩╸┩╸	Electr. shutoff: Speed 1/min: 400 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: - Idle delivery: 1st speed 1/min: 425
pressure bar: 3,44,0 KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,46,0 KSB solenoid-operated valve volt: 12,0 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,68,2 KSB solenoid-operated valve volt: 12,0	, , , , , , , , , , , , , , , , , , , 	Electr. shutoff: Speed 1/min: 400 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: - Idle delivery: 1st speed 1/min: 425 KSB solenoid-operated
pressure bar: 3,44,0 KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,46,0 KSB solenoid-operated valve volt: 12,0 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,68,2 KSB solenoid-operated	╏╸┤╸╎╸┤╸┤╸┪╸┪╸┩╸┩╸┩╸┤╸┤╸┤╸┩╸┩	Electr. shutoff: Speed 1/min: 400 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: - Idle delivery: 1st speed 1/min: 425 KSB solenoid-operated
pressure bar: 3,44,0 KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,46,0 KSB solenoid-operated valve volt: 12,0 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,68,2 KSB solenoid-operated valve volt: 12,0	╏╸┤╸╎╸┤╸┤╸┥╸┩╸┩╸┩╸┤╸┤╸┤╸┤╸┥╺┤╸	Electr. shutoff: Speed 1/min: 400 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: - Idle delivery: 1st speed 1/min: 425 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 7,011,0
pressure bar: 3,44,0 KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,46,0 KSB solenoid-operated valve volt: 12,0 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,68,2 KSB solenoid-operated valve volt: 12,0 Overflow quantity at overflow valve:	╏╸┤╸┤╸┤╸┤╸┥╸┥╸┩╸┩╸┤╸┤╸┤╸┤╸┥╸┥╸┥╸	Electr. shutoff: Speed 1/min: 400 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: - Idle delivery: 1st speed 1/min: 425 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 7,011,0
pressure bar: 3,44,0 KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,46,0 KSB solenoid-operated valve volt: 12,0 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,68,2 KSB solenoid-operated valve volt: 12,0 Overflow quantity at overflow valve: 1st speed 1/min: 700	┆╌┼╌┼╌┼╌┼╌┼╌┼╌┼╌┼╌┼╌┼╌┼╌┼╌┼╌┼╌┼╌┼╌┼╌┼╌┼	Electr. shutoff: Speed 1/min: 400 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: - Idle delivery: 1st speed 1/min: 425 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 7,011,0 1000H.: (5,013,0)
pressure bar: 3,44,0 KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,46,0 KSB solenoid-operated valve volt: 12,0 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,68,2 KSB solenoid-operated valve volt: 12,0 Overflow quantity at overflow valve: 1st speed 1/min: 700 KSB solenoid-operated KSB solenoid-operated	╬ ╌╬╌╬╌╬╌╇╌╇╸╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╍╬╍╬╸╬╸	Electr. shutoff: Speed 1/min: 400 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: - Idle delivery: 1st speed 1/min: 425 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 7,011,0 1000H.: (5,013,0) 2nd speed 1/min: 500
pressure bar: 3,44,0 KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,46,0 KSB solenoid-operated valve volt: 12,0 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,68,2 KSB solenoid-operated valve volt: 12,0 Overflow quantity at overflow valve: 1st speed 1/min: 700 KSB solenoid-operated valve volt: 12,0	╬ ╌╎╸╎╸┤╸┤╸┥╸┥╸╏╸╬ ╸╬╸╬╸╫╸ ╏╸╏╸╏╸╏╸ ╂╸╇╼╇	Electr. shutoff: Speed 1/min: 400 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: - Idle delivery: 1st speed 1/min: 425 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 7,011,0 1000H.: (5,013,0) 2nd speed 1/min: 500 KSB solenoid-operated
pressure bar: 3,44,0 KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,46,0 KSB solenoid-operated valve volt: 12,0 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,68,2 KSB solenoid-operated valve volt: 12,0 Overflow quantity at overflow valve: 1st speed 1/min: 700 KSB solenoid-operated valve volt: 12,0	╬ ╌╬╌╬╌╬╌╬╌╇╌╇╍╇╍╇╌╬╌╬╌╬╌╬╌╬╌╬╌╇╌╇╌╇╍╇╍╇╍╇ ╾╇	Electr. shutoff: Speed 1/min: 400 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: - Idle delivery: 1st speed 1/min: 425 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 7,011,0 1000H.: (5,013,0) 2nd speed 1/min: 500 KSB solenoid-operated
pressure bar: 3,44,0 KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,46,0 KSB solenoid-operated valve volt: 12,0 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,68,2 KSB solenoid-operated valve volt: 12,0 Overflow quantity at overflow valve: 1st speed 1/min: 700 KSB solenoid-operated valve volt: 12,0 Overflow : 4183	╬ ╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╇╌╇╍╇╍╄╍╄╍╂╍╂╍ ╂ ╸	Electr. shutoff: Speed 1/min: 400 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: - Idle delivery: 1st speed 1/min: 425 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 7,011,0 1000H.: (5,013,0) 2nd speed 1/min: 500 KSB solenoid-operated valve volt: 12,0
pressure bar: 3,44,0 KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,46,0 KSB solenoid-operated valve volt: 12,0 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,68,2 KSB solenoid-operated valve volt: 12,0 Overflow quantity at overflow valve: 1st speed 1/min: 700 KSB solenoid-operated valve volt: 12,0 Overflow quantity at overflow valve: 1st speed 1/min: 700 KSB solenoid-operated valve volt: 12,0 Overflow : 4183 quantity cm3/10s: (2698)	╬ ╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌	Electr. shutoff: Speed 1/min: 400 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: - Idle delivery: 1st speed 1/min: 425 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 7,011,0 1000H.: (5,013,0) 2nd speed 1/min: 500 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 2,58,5
pressure bar: 3,44,0 KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,46,0 KSB solenoid-operated valve volt: 12,0 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,68,2 KSB solenoid-operated valve volt: 12,0 Overflow quantity at overflow valve: 1st speed 1/min: 700 KSB solenoid-operated valve volt: 12,0 Overflow quantity at overflow valve: 1st speed 1/min: 700 KSB solenoid-operated valve volt: 12,0 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 2300	╬ ╌╎╸╎╸┤╸┤╸┥╸┥╸┩╸╇╸╇╸╬╸┆╸┤╸┩╸╇╸╇╸╇╸╇╸╇╸╇╸╇╸╇╸╇╸	Electr. shutoff: Speed 1/min: 400 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: - Idle delivery: 1st speed 1/min: 425 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 7,011,0 1000H.: (5,013,0) 2nd speed 1/min: 500 KSB solenoid-operated valve volt: 12,0
pressure bar: 3,44,0 KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,46,0 KSB solenoid-operated valve volt: 12,0 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,68,2 KSB solenoid-operated valve volt: 12,0 Overflow quantity at overflow valve: 1st speed 1/min: 700 KSB solenoid-operated valve volt: 12,0 Overflow quantity at overflow valve: 1st speed 1/min: 700 KSB solenoid-operated valve volt: 12,0 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 2300	╬ ╌╎╸╎╸┤╸┤╸┥╸┥╸┩╸╬╸╬╸╬╸╬╸╬╸╇╸╇╸╇╸╇╸╇╸╇╸╇╸╇╸╇╸╇╸╇╸╇╸╇╸	Electr. shutoff: Speed 1/min: 400 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: - Idle delivery: 1st speed 1/min: 425 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 7,011,0 1000H.: (5,013,0) 2nd speed 1/min: 500 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 2,58,5
KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,46,0 KSB solenoid-operated valve volt: 12,0 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,68,2 KSB solenoid-operated valve volt: 12,0 Overflow quantity at overflow valve: 1st speed 1/min: 700 KSB solenoid-operated valve volt: 12,0 Overflow quantity at overflow valve: 1st speed 1/min: 700 KSB solenoid-operated valve volt: 12,0 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 2300 KSB solenoid-operated	╬ ╌╎╸╎╸╎╸┩╸┩╸┩╸┩╸╇╸╬╸╬╸╬╸╇╸╇╸╇╸╇╸╇╸╇╸╇╸╇╸╇╸╇╸╇╸╇	Electr. shutoff: Speed 1/min: 400 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: - Idle delivery: 1st speed 1/min: 425 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 7,011,0 1000H.: (5,013,0) 2nd speed 1/min: 500 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 2,58,5 1000H.: -
pressure bar: 3,44,0 KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,46,0 KSB solenoid-operated valve volt: 12,0 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,68,2 KSB solenoid-operated valve volt: 12,0 Overflow quantity at overflow valve: 1st speed 1/min: 700 KSB solenoid-operated valve volt: 12,0 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 2300 KSB solenoid-operated valve volt: 12,0 KSB solenoid-operated valve volt: 12,0	╬ ╌╎╸╎╸┤╸┤╸┥╸┥╸┩╸╬╸╬╸╬╸╎╸╽╸╎╸┩╸┩╸┩╸┩╸┩╸┩╸┩╸╏╸╏╸	Electr. shutoff: Speed 1/min: 400 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: - Idle delivery: 1st speed 1/min: 425 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 7,011,0 1000H.: (5,013,0) 2nd speed 1/min: 500 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 2,58,5
KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,46,0 KSB solenoid-operated valve volt: 12,0 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,68,2 KSB solenoid-operated valve volt: 12,0 Overflow quantity at overflow valve: 1st speed 1/min: 700 KSB solenoid-operated valve volt: 12,0 Overflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 2300 KSB solenoid-operated valve volt: 12,0 Overflow : 55138	╬ ╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌	Electr. shutoff: Speed 1/min: 400 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: - Idle delivery: 1st speed 1/min: 425 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 7,011,0 1000H.: (5,013,0) 2nd speed 1/min: 500 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 2,58,5 1000H.: - Automatic starting fuel delivery:
pressure bar: 3,44,0 KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,46,0 KSB solenoid-operated valve volt: 12,0 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,68,2 KSB solenoid-operated valve volt: 12,0 Overflow quantity at overflow valve: 1st speed 1/min: 700 KSB solenoid-operated valve volt: 12,0 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 2300 KSB solenoid-operated valve volt: 12,0 KSB solenoid-operated valve volt: 12,0	╬ ╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╇╌╇╌╇╌╇╌╬╌╬╌╬╌╬╌╬╌╬╌╇ ╌	Electr. shutoff: Speed 1/min: 400 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: - Idle delivery: 1st speed 1/min: 425 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 7,011,0 1000H.: (5,013,0) 2nd speed 1/min: 500 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 2,58,5 1000H.: - Automatic starting fuel delivery: 1st speed 1/min: 400
KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,46,0 KSB solenoid-operated valve volt: 12,0 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,68,2 KSB solenoid-operated valve volt: 12,0 Overflow quantity at overflow valve: 1st speed 1/min: 700 KSB solenoid-operated valve volt: 12,0 Overflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 2300 KSB solenoid-operated valve volt: 12,0 Overflow : 55138	╬ ╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╇╌╇╍╇╍╇╍╇╌╇╼╇╍╇╍╇╍╇╍╇╍╇╸╇╸╇	Electr. shutoff: Speed 1/min: 400 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: - Idle delivery: 1st speed 1/min: 425 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 7,011,0 1000H.: (5,013,0) 2nd speed 1/min: 500 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 2,58,5 1000H.: - Automatic starting fuel delivery: 1st speed 1/min: 400
KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,46,0 KSB solenoid-operated valve volt: 12,0 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,68,2 KSB solenoid-operated valve volt: 12,0 Overflow quantity at overflow valve: 1st speed 1/min: 700 KSB solenoid-operated valve volt: 12,0 Overflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 2300 KSB solenoid-operated valve volt: 12,0 Overflow : 55138 quantity cm3/10s: (40153)	╬╌╫╌╬╌╬╌╫╌╇╌╫╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌╬╌	Electr. shutoff: Speed 1/min: 400 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: - Idle delivery: 1st speed 1/min: 425 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 7,011,0
KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,46,0 KSB solenoid-operated valve volt: 12,0 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,68,2 KSB solenoid-operated valve volt: 12,0 Overflow quantity at overflow valve: 1st speed 1/min: 700 KSB solenoid-operated valve volt: 12,0 Overflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 2300 KSB solenoid-operated valve volt: 12,0 Overflow : 55138	╬ ╌╎╸╎╸┤╸┤╸┥╸╏╸╬╸╬╸╬╸╬╸╬╸╇╸╇╸╇╸╇╸╇╸╇╸╇╸╇╸╇╸╇╸╇╸╇╸╇╸╇	Electr. shutoff: Speed 1/min: 400 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: - Idle delivery: 1st speed 1/min: 425 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 7,011,0 1000H.: (5,013,0) 2nd speed 1/min: 500 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 2,58,5 1000H.: - Automatic starting fuel delivery: 1st speed 1/min: 400 KSB solenoid-operated valve volt: 12,0 KSB solenoid-operated valve volt: 12,0
pressure bar: 3,44,0 KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,46,0 KSB solenoid-operated valve volt: 12,0 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,68,2 KSB solenoid-operated valve volt: 12,0 Overflow quantity at overflow valve: 1st speed 1/min: 700 KSB solenoid-operated valve volt: 12,0 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 2300 KSB solenoid-operated valve volt: 12,0 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.:	╬╌╫╌╬╌╬╌╫╌╫╌╫╌╫╌╬╌╬╌╬╌╬╌╬╌╬╌╫╌╫╌╫╌╫╌╫╌╫	Electr. shutoff: Speed 1/min: 400 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: - Idle delivery: 1st speed 1/min: 425 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 7,011,0
KSB solenoid-operated valve volt: 12,0 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,46,0 KSB solenoid-operated valve volt: 12,0 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,68,2 KSB solenoid-operated valve volt: 12,0 Overflow quantity at overflow valve: 1st speed 1/min: 700 KSB solenoid-operated valve volt: 12,0 Overflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 2300 KSB solenoid-operated valve volt: 12,0 Overflow : 55138 quantity cm3/10s: (40153)	╬╼╫╌╬╍╫ ╌╏╸╬╸╬╸╬╸╬╸╬╸╬╸╬╸╬╸╬╸╇╸╇╸╇╸╇╸╇╸╇╸╇╸╇╸╇╸╇╸	Electr. shutoff: Speed 1/min: 400 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: - Idle delivery: 1st speed 1/min: 425 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 7,011,0 1000H.: (5,013,0) 2nd speed 1/min: 500 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 2,58,5 1000H.: - Automatic starting fuel delivery: 1st speed 1/min: 400 KSB solenoid-operated valve volt: 12,0 KSB solenoid-operated valve volt: 12,0

2nd speed 1/min: 50 KSB solenoid-operated 1/min: 500 valve volt: 12,0 Del.quantity cm3/: - max. 1000H: 25,5

Shutoff electromagnet:

Cut-in

min. voltage Rated voltage : 10,0 : 12,0

Mounting and assembly dimensions:

Designation

K KF mm MS

Remarks:

Note inst. in remarks column

Test sheet : PEU 1,9 K4

: 06.11.89 Edition

replaces

Calibrating oil : ISO 4113

: VE 4/ 9F2300 R272-2 Injection pump : 0 460 494 240

Type number

Customer-specific information Customer : PEUGEOT

Engine

: XUD9A

TEST BENCH REQUIREMENTS

Calibrating-oil

return temp. ,C

with thermometer: 40...48 electronically

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening

bar: 130...133 pressure

Test ini. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 mm: 450 x Lenath

Start of delivery Prestroke te mm: — (from BDC): —

Indicator setting:

Piston stroke mm: 0.3 **Outlet** : A

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1250 Speed Setting value mm: 2,6...3,0

Supply-pump pressure:

Speed 1/min: 1250 Setting value bar: 3,9...4,5

Full-load del. w/out charge press.:

1/min : 1250

Del.quantity cm3/

1000H.: 30,0...31,0 cm3/: 2,5

Dispersion 1000H .: -

Low-idle speed regulation:

Speed 1/min: 375

Del.quantity cm3/ 1000H.: 8,0...10,0

cm3/: 2,5Dispersion 1009н.: -

Residual-Delivery Setting 1/min: 550 Speed

Del.quantity cm3/

1000H.: 0,0...6,0

Full-load speed regulation:

1/min: 2500 Speed

Del.quantity cm3/

1000H: 19,0...25,0

Start:

1/min: 100 Speed Del.quantity

cm3/1000H.: 45,0 mind

Load-dependent start of delivery:

1/min: 1250 Speed

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 800 1st speed

mm: 0,2...1,0TD travel

mm: (0,0...1,3)

1/min: 1250 2nd speed TD travel

mm: 2,6...3,0 mm: (2,3...3,3) 1/min: 2000

3rd speed TD travel

mm: 6,0...6,8 mm: (5,7...7,1)

Supply-pump Pessure characteristic:

1/min: 800 1st speed

Supply-pump

bar: 2,6...3,2 pressure

1/min: 1250 2nd speed

Supply-pump bar: 3,9...4,5 pressure 3rd speed 1/min: 2000 Supply-pump pressure bar: 5,9...6,5 Overflow quantity at overflow valve: 1/min: 500 1st speed Oveflow : 41...83 cm3/10s: (26...98) 1/min: 2250 : 55...138 quantity 2nd speed Overflow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1/min: 2650 1st speed cm3/: 0,0...10,0Del.quantity 1000H.: -1/min: 2500 2nd speed cm3/: 19,0...25,0 Del.quantity 1000H.: (18,0...26,0) 1/min: 2250 cm3/: 31,5...34,5 3rd speed Del.quantity 1000H.: (30,7...35,3) 1/min: 1250 4th speed Del.quantity cm3/: 30,0...31,0 1000H.: (28,2...32,8) 1/min: 800 5th speed Del.quantity cm3/: 30,7...33,7 1000H.: (29,7...34,7) 6th speed 1/min: 500 Del.quantity cm3/: 30,7...33,7 1000H.: (29,7...34,7) Zero delivery (stop): Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 8,0...10,0 1000H.: (6,0...12,0) High Idle: 1/min: 470 Speed Del.quantity cm3/: 8,0...10,0 1000H.: (6,0...12,0) Residual: 1/min: 550 Speed : 2,5...3,5 Del.quantity 1000H.: (0,0...6,0)

Automatic starting fuel delivery:

1/min: 200

Del.quantity cm3/: -1000H: 40,0 ind. 2nd speed 1/min: 300 Del.quantity cm3/: - max. 1000H: 35,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 : 12,0 Rated voltage Mounting and assembly dimensions: Designation mm KF MS mm Remarks:

1st speed

Note inst. in remarks column

: FIA 1,7 P11 Test sheet : 06.11.89 Edition : 19.07.89 replaces : ISO 4113 Calibrating oil

: VE 4/ 9F2300 256-2 Injection pump : 0 460 494 253 Type number

Customer Part-No. :

Customer-specific information : FIAT-AUTO Customer

: M705 LA 19.0 Engine

TEST BENCH REQUIREMENTS

Calibrating oil return temp. , C

with thermometer: 40...48 : 42...50 electronically

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening

bar: 130...133 pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 mm : 450 x Length

Start of delivery Prestroke mm : -(from BDC): -

Indicator setting: Piston stroke mm: 1.0 Outlet. : A

Injection pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1500 Speed Setting value mm: 4,4...4,8

Supply-pump pressure:

1/min: 1500 Speed Setting value bar: 5,3...5,9

Full-load del. w/out charge press.:

1/min : 1500

Del.quantity cm3/

1000H.: 28,0...29,0 cm3/: 2,5

Dispersion 1000H.: -

Low-idle speed regulation:

1/min: 390 Speed

Del.quantity cm3/ 1000H.: 10,0...14,0 Dispersion cm3/: 2,5

1000H.: (2,5)

Full-load speed regulation:

Speed 1/min: 2500

Del.quantity cm3/ 1000H: 18,5...24,5

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 55,0 mind

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 800 1st speed TD travel

mm: 1,1...1,9 mm: (0,8...2,2) 1/min: 1500 2nd speed

mm: 4,4...4,8 mm: (3,9...5,3) TD travel

1/min: 2000 3rd speed TD travel mm: 6,6...7,4

mm: (6,2...7,8) 1/min: 2300 mm: 7,8...8,6 4th speed

TD travel mm: (7,5...8,9)

Supply-pump pressure characteristic:

1st speed 1/min: 600

Supply-pump

bar: 3,1...3,7 pressure

Del.quantity cm3/: 0,0...3,0 1000H.: -1/min: 1500 2nd speed Supply-pump bar: 5,3...5,9 1/min: 2300 pressure Automatic starting fuel delivery: 3rd speed Supply-pump 1/min: 300 bar: 7,1...7,7 1st speed pressure Del.quantity cm3/: -Overflow quantity at overflow valve: 1000H: 48,0 ind. 1/min: 400 1/min: 600 2nd speed 1st speed : 41...83 Del.quantity cm3/: -Oveflow cm3/10s: (26...98) 1000H: 45,0 quantity 1/min: 2300 2nd speed : 55...138 Overflow Shutoff electromagnet: quantity cm3/10s: (40...153) Cut-in : 10,0 Delivery-quant. and breakaway char .: min. voltage : 12,0 Rated voltage 1st speed 1/min: 2900 Del.quantity cm3/: 0,0...6,0 Mounting and assembly dimensions: 1000H.: -1/min: 2650 Designation 2nd speed Del.quantity cm3/: 4,5...11,5 5,6...6,0 K mm 1000H.: (3,0...11,0) KF 1/min: 2500 : 1,6...2,0 MS 3rd speed MM. Del.quantity cm3/: 18,5...24,5 1000H.: (17,5...25,5) 4th speed 1/min: 2300 Del.quantity cm3/: 29,3...31,7 1000H.: (28,2...32,8) : 17,0...19,0 XK mm : 9,8...13,2 XL mn Remarks: : 1/min: 1500 5th speed Del.quantity cm3/: 28,0...29,0 1000H.: (26,2...30,8) 1/min: 1000 cm3/: 27,8...30,2 6th speed Del.quantity cm3/: 2/,0...31,3) 1/min: 600 7th speed Del.quantity cm3/: 28,9...31,9 1000H.: (27,4...33,4) Zero delivery (stop): Electr. shutoff: 1/min: 390 Speed ELAB volt: -Del.quantity cm3/: 0,0...3,0 1000H.: max. Idle delivery: 1st speed 1/min: 390 Del.quantity cm3/: 10,0..14,0 1000H.: (7,0...17,0) 1/min: 440 2nd speed Del.quantity cm3/: 0,0...6,0 1000H.: (0,0...8,5) 3rd speed 1/min: 500

Note inst. in remarks column

: VWW 2,0 K1 : 06.11.89 Test sheet Edition : 03.03.89 replaces Calibrating oil : ISO 4113

Injection pump : VE 5/ 9F2250 L245 : 0 460 495 001 Type number

Customer Part-No.:

Customer-specific information

Customer

: 153T-LLK Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. , C

with thermometer: 40...48 electronically

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening

bar: 147...150 pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery Prestroke mm : --(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1500 Charge press. hPa: 750 Setting value mm: 3,0...3,4 KSB solenoid-operated

volt: 12,0 valve

Supply-pump pressure:

1/min: 1500 Speed Charge press. hPa: 750 Setting value bar: 6,0...6,6 KSB solenoid-operated volt: 12,0 valve

Full-load del. with charge press.:

1/min: 1500 Speed Del.quantity cm3/ 1000H.: 42,7...43,7

KSB solenoid-operated volt : 12,0 cm3/ : 2,5 valve Dispersion 1000H : (3.0)

Full-load del. w/out charge press.:

1/min : 700 Speed Del.quantity cm3/ 1000H.: 27,0...28,0

KSB solenoid-operated volt: 12,0 valve

Low-idle speed regulation:

1/min: 390

Del.quantity cm3/ 1000H.: 10,0...12,0

KSB solenoid-operated volt: 12,0 valve cm3/: 2,5 1000H.: (3,0) Dispersion

Residual-Delivery Setting Speed 1/min: 540 Del.quantity cm3/ 1000H.: 2,5...3,5

KSB-Solenoid-Operated valve Volt : 12,0

Full-load speed regulation:

1/min: 2525 Speed Del.quantity cm3/ 1000H: 16,0...20,0

KSB solenoid-operated volt: 12,0 valve

Start:

1/min: 100 : 37,0...48,0 Speed Del.quantity cm3/1000H.: mind

KSB solenoid-operated volt: 12,0 valve

Inspection pump test specifications Test specifications in parentheses

Timing device characteristic:

+	Oveflow : 4183
+	quantity cm3/10s: (2698)
1st speed	2nd speed
Charge press. hPa: 750	Charge press. hPa: 750
TD travel mm: 2,32,7 + mm: 1,53,5 +	KSB solenoid-operated
mm: 1,53,5	valve volt: 12,0
KSB solenoid-operated +	Overflow : 55138
valve volt: - +	quantity cm3/10s: (40153)
2nd speed 1/min: 1000 +	
Charge press. hPa: 750	Delivery quant. and breakaway char.
TD travel mm: 0,81,6 +	
mm: $(0,51,9)$	1st speed 1/min: 850
KSB solenoid-operated +	Charge-air pressure-setting
valve volt: 12,0	point hPa: 350
3rd speed 1/min: 1500 +	KSB solenoid-operated
Charge press. hPa: 750	valve volt: 12,0
TD travel mm: 3,03,4 +	Del.quantity cm3/: 33,534,5 1000H.: (31,037,0)
mm: (1,53,9) +	1000H.: (31,037,0)
KSB solenoid-operated +	2nd speed 1/min: 2525
valve volt: 12,0	Charge press. hPa: 750
4th speed 1/min: 2250 +	KSB solenoid-operated
Charge press. hPa: 750	valve volt: 12,0
TD travel mm: 6,06,8	Del.guantity cm3/: 16,020,0
mm: (5,77.1)	1000H.: (14,022,0)
KSB solenoid-operated +	Del.quantity cm3/: 16,020,0 1000H.: (14,022,0) 3rd speed 1/min: 2425
valve volt: 12,0	Charge press. hPa: 750
1	KSB solenoid-operated
Supply-pump pressure characteristic:	valve volt: 12,0
supply parts pressure unaracteristre.	Del.quantity cm3/: 25,535,5
1st speed 1/min: 500 +	1000H.: (24,536,5)
Charge press. hPa: 750	4th speed 1/min: 2250
	Charge press. hPa: 750
Supply-pump + pressure bar: 5,26,4 +	KSB solenoid-operated
	valve volt: 12,0
KSB solenoid-operated + valve volt: - +	Not quantity cm3/: 37 5 39 5
2nd speed 1/min: 700	Del.quantity cm3/: 37,539,5 1000H.: (36,340,7)
	5th speed 1/min: 1500
Supply-pump + 1 4 7	Charge press. hPa: 750 KSB solenoid-operated
pressure bar: 4,14,7	
KSB solenoid-operated +	valve volt: 12,0 Del.quantity cm3/: 42,743,7
valve volt: 12,0 +	1000H.: (41,045,4)
3rd speed 1/min: 1500	
Charge press. hPa: 750	6th speed 1/min: 850
Supply-pump +	Charge press. hPa: 350
pressure bar: 6,06,6	KSB solenoid-operated valve volt: 12,0
KSB solenoid-operated	valve volt: 12,0
valve volt: 12,0	Del.quantity cm3/: 33,534,5
4th speed 1/min: 2250 +	1000H.: (31,037,0)
Charge press. hPa: 750	7th speed 1/min: 700
Supply-pump +	Charge press. hPa: -
pressure bar: 7,78,3	KSB solenoid-operated
KSB solenoid-operated +	valve volt: 12,0
valve volt: 12,0 +	Del.quantity_cm3/: 27,028,0_
†	1000H.: (24,530,5)
Overflow quantity at overflow valve: +	8th speed 1/min: 700
+	Charge press. hPa: 750
1st speed 1/min: 700 +	KSB solenoid-operated
Charge press. hPa: - +	valve volt: 12,0
KSB solenoid-operated +	valve volt: 12,0 Del.quantity cm3/: 37,040,0
valve volt: 12,0 +	1000H: (35,541,5)

1/min: 500 9th speed Charge press. hPa: -KSB solenoid-operated volt: 12,0 valve

cm3/: 24,5...29,5 Del.quantity

1000H: (22,0...32,0)

Zero delivery (stop):

Electr. shutoff:

1/min: 415 Speed ELAB volt: -

Del.quantity cm3/: 0,0...3,0 max. 1000H.: -

max.

Idle delivery:

1st speed 1/min: 390 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 10,0..12,0

1000H.: (5,5...16,5)

1/min: 415 2nd speed KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 6,0...10,0 1000H.: (2,5...13,5)

Residual:

Speed

1/min: 490 : 3,3...5,3 Del.quantity

1000H .: (0,8...7,8)

KSB-Solenoid-operated Volt: 12,0 valve

Automatic starting fuel delivery:

1/min: 190 3rd speed KSB solenoid-operated valve

volt: 12,0 cm3/: 35,0...85,0 Del.quantity

1000H: -

1/mi: 390 4th speed KSB solenoid-operated Volt: 12,0 cm3/: 15,0...35,0 valve

Del.quantity

1000: -

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 : 12,0 Rated voltage

Mounting and assembly dimensions:

Designation

mm : K1 KF mm

MS mm SVS max. mm

: 1,6...2,0 : 1,3 : 17,0...19,0 : 10,3...13,7 XK mm XL mm

Remarks:

Operate control lever after each manifold-pressure compensator pressure

change.

* Correction at adjusting nut (46)

L05

Note remarks

Test sheet

: 06.10.89 Edition

Replaces

: ISO-4113 Test oil

: 0 400 064 034 Combination no.

Injection pump

Pump designation : PES4M55C12ORS106 : 0 410 054 986 EP type number

Governor

Governor design. : RSV350...1750MOB129

: 0 420 035 078 Governer no.

Customer-spec. information : MB-NFZ Customer

: 0M616/932 Engine

1st version kW : 44.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 1 417 413 012

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 003

Outside diameter x Wall thickness

: 6.00X2.00X600 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...34

: 1.70...1.80 : (1.65...1.85) Prestroke mm

Rack travel in mm : 18.50...21.50

: 1-3-4-Firing order

: 0-90-180-270 Phasing

Tolerance + - ... : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1730

Rack travel in mm : 13.10...13.20

Del.guantity cm3/: 3.8...3.9

100 s: (3.7...4.0)

cm3 : 0.2Spread

100 s: (0.3)

2nd speed rpm : 350.0Rack travel in mm: 6.8...7.0 Del.quantity cm3/: 0.6...0.8

100 s: (0.5...0.8)

cm3 : 0.1Spread 100 s: (0.1)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm: 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1730 Speed

: 38.5...39.5 Del.quantity 1000 : (37.5...40.5)

: 2.50 Spread cm3

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 52...60

Setting point:

Speed Rack travel in mm: 0.6

Testing:

1st rack travel in: 12.20

rpm : 1760...1780 Speed

2nd rack travel in: 4.00

rpm : 1885...1915 Speed

4th rack travel in: 1970

rpm : 0.30...1.70 Speed

LOW IDLE 1 Control lever position degrees: 14...22 Setting point w/out bumper spring Speed : 350 rpm Rack travel in mm: 6.4 Testing: Speed : 100 rpm Minimum rack trave: 20.30 Speed rpm : 350 Rack travel in mm : 6.30...6.50 Rack travel in mm: 2.00 Speed non : 770...830 : 900 Speed rpm Maximum rack trave: 1.50 TORQUE CONTROL Torque control curve - 1st version rpm : 1730 1st speed Rack travel in m: 13.10...13.20 2nd speed rpm : 1100 Rack travel in m: 13.70...13.90 3rd speed rpm : 600 Rack travel in m: 14.10...14.30 FUEL DELIVERY CHARACTERISTICS 1st version : 1100 Speed rpm Del.quantity cm3/: 37.5...39.5 1000 s: (36.5...40.5) Spread cm3 : 2.501000 s: (3.) : 600 Speed rpm Del.quantity cm3/: 38.0...40.0 1000 s: (37.0...41.0) Spread cm3 : 2.501000 s: (3.00) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.20 : 1760...1780 Speed rpm STARTING FUEL DELIVERY : 100 Speed rom Del.quantity cm3/: 53.0...0.0 1000 s: (50.0...0.0) Rack travel in mm : 20.30...0.00

Speed rpm : 350
Rack travel in mm : 6.80...7.00
Del.quantity cm3/: 6.0...8.0
1000 s: (5.5...8.5)
Spread cm3 : 1.00
1000 s: (1.50)

Remarks:

:

L07

LOW IDLE

Note remarks

: VOL 7,1 d Test sheet : 09.11.89 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 846 505

Injection pump

Pump designation : PE6P110A320RS483 EP type number : 0 411 816 159

Governor

Governor design. : RQV250...1200PA918 Governer no. : 0 421 813 772

Customer-spec. information : VOLVO Customer

: TD71F Engine

1st version kW : 162.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 12.7...12.9

100 s: (12.4...13.2)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 250.0 2nd speed Rack travel in mm : 5.3...5.5 Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.3) cm3 : 0.3 Spread

100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

: 1.10...1.30 travel mm 2nd speed rpm: 380

: 2.30...2.60 travel mm

3rd speed rpm : 500 travel mm : 2.90...3.30

4th speed rpm: 1260

travel mm : 7.70...7.90

rpm : 1400 5th speed

: 9.00...9.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1330 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900 Del.quantity : 127.0...129.0 1000 : (124.0...132.0)

cm3 : 4.00 Spread

 $1000 \div (7.50)$

RATED SPEED

1st version Control lever

position degrees: 54...62

Testing:

1st rack travel in: 11.30 Speed rpm : 1240...1250

2nd rack travel in: 4.00

rpm : 1380...1410 Speed

4th rack travel in: 1500

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 6...14

Testina:

Speed : 100 rpm Minimum rack trave: 6.80 rpm : 250

Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

rpm : 250...450 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 900 Pressure

: 12.30...12.40 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 10.20...10.30

2nd pressure hPa : 570

Rack travel in m: 12.10...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700 Del.quantity cm3/: 85.0...88.0 1000 s: (82.0...91.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30

rpm : 1240...1250 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 170.0...200.0 1000 s: (166.0...204.0) Rack travel in mm: 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.0...23.0)

cm3 : 3.00Spread

1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

Note remarks

: VOL 7,1 d 1 Test sheet : 09.11.89 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 846 506

Injection pump

Pump designation : PE6P110A320RS483-1

EP type number : 0 411 816 160

Governor

Governor design. : RQV250...1200PA918-1

Governer no. : 0 421 813 773

Customer-spec. information : VOLVO Customer

: TD71FS Engine

1st version kW : 180.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp.., C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 13.10...13.20

Del.quantity cm3/: 14.2...14.4

100 s: (13.9...14.7)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 250.0 2nd speed Rack travel in mm: 5.3...5.5 Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.3) cm3 : 0.3

Spread 100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 1.10...1.30 travel mm

rpm : 380 2nd speed : 2.30...2.60 travel mm

rpm : 500 : 2.90...3.30 3rd speed travel mm

rpm : 1260 4th speed : 7.70...7.90

travel mm rpm : 1400 5th speed

: 9.00...9.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1330 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1200

Del.quantity : 142.0...147.0)

cm3 : 4.00 1000 : (7.50) Spread

RATED SPEED

1st version Control lever

position degrees: 54...62

Testing:

1st rack travel in: 12.10

Speed rpm : 1240...1250 2nd rack travel in: 4.00 Speed rpm : 1385...1415

4th rack travel in: 1500

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 6...14

Testing:

: 100 Speed rpm Minimum rack trave: 6.80 Speed rpm

Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

rpm : 250...450 Speed

Aneroid/Altitude Compensator Test

1st version

Setting Speed

: 500 rpm hPa : 1200 Pressure

: 13.10...13.20 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.20...10.30

2nd pressure hPa : 710

Rack travel in m: 12.20...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 rpm : 1000 Speed

Del.quantity cm3/: 134.0...138.0 1000 s: (131.0...141.0)

Aneroid pressure h: -: 700

rpm Del.quantity cm3/: 85.0...88.0 1000 s: (82.0...91.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.10

rpm : 1240...1250 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity_cm3/ : 170.0...200.0 1000 s: (166.0...204.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.30...5.50 Del.quantity cm3/: 16.0...20.0 1000 s: (13.0...23.0)

cm3 : 3.00Spread 1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

Note remarks

Test sheet : VOL 10,0 z Edition : 09.11.89

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 846 529

Injection pump

Pump designation : PE6P12OA32ORS3186 : 0 411 826 756 EP type number

Governor

: RQV250..1025PA921-4 Governor design.

Governer no. : 0 421 813 787

Customer-spec. information Customer : VOLVO

Engine : TD102F

1st version kW : 220.0 : 2050 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.60...2.70 : (2.55...2.75) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 19.7...19.9

100 s: (19.4...20.2)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 250.02nd speed

Rack travel in mm : 4.2...4.4 Del.quantity cm3/: 1.7...2.2

100 s: (1.4...2.4)

cm3 : 0.5Spread 100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 1.20...1.30 rpm : 430 travel mm

2nd speed : 3.50...3.80 travel mm

rpm : 700 3rd speed

: 6.40...6.60 travel mm rpm : 900 4th speed

: 6.40...6.60 travel mm

rpm : 1080 5th speed

travel mm : 8.30...8.50

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1080

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1000

: 197.0...199.0 Del.quantity 1000 : (194.0...202.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 58...66 Testing: 1st rack travel in: 10.40 rpm : 1055...1065 Speed 2nd rack travel in: 4.00 rpm : 1110...1140 Speed 4th rack travel in: 1250 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 4...12 Testing: rpm : 100 Speed Minimum rack trave: 5.70 rpm Rack travel in mm : 4.20...4.40 CONSTANT REGULATION rpm : 250...350 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 hPa : 1000 Pressure : 11.40...11.50 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.80...9.00 2nd pressure hPa : 80 Rack travel in m: 9.00...9.10 3rd pressure hPa : 400 Rack travel in m: 10.90...11.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -

: 700

1000 s: (140.0...148.0)

rpm Del.quantity cm3/: 143.0...145.0 **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 10.40

Speed rpm : 1055...1065

LOW IDLE

Speed rpm : 250

Rack travel in mm : 4.20...4.40 Del.quantity cm3/: 17.0...22.0 1000 s: (14.5...24.5)

cm3 : 5.00

Spread 1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm. Permissible alteration from 2.20...2.90

:

Speed

Note remarks

: VOL 7,1 d 2 Test sheet Edition : 01.12.89

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 846 534

Injection pump

Pump designation : PE6P110A320RS483-4 EP type number : 0 411 816 172

Governor

Governor design. : RQV250...1200PA918-2

Governer no. : 0 421 813 774

Customer-spec. information : VOLVO Customer

Engine : TD71FD

1st version kW : 158.0 : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance $+ - \dots : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 12.0...12.2

100 s: (11.7...12.5)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 250.0 2nd speed Rack travel in mm: 5.3...5.5 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.3) cm3 : 0.3

Spread

100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 1.10...1.30 travel mm

rpm : 380 2nd speed travel mm

: 2.30...2.60 rpm : 500 : 2.90...3.30 3rd speed travel mm

4th speed rpm: 1260

: 7.70...7.90 travel mm

rpm : 1400 5th speed

: 9.00...9.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1330 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed Aneroid pressure h: 900

Del.quantity : 120.0...122.0 1000 : (117.0...125.0)

cm3 : 4.00 1000 : (7.50) Spread

RATED SPEED

1st version Control lever

position degrees: 54...62

Testing:

1st rack travel in: 11.00 rpm : 1260...1270 Speed

2nd rack travel in: 4.00

Speed rpm: 1390...1420 4th rack travel in: 1550

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 6...14

Testing:

: 100 Speed rpm Minimum rack trave: 6.80 rpm : 250

Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

rpm : 250...450 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 900 Pressure

: 12.00...12.10 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.20...10.30 2nd pressure hPa : 560 Rack travel in m: 11.80...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 700 Speed

Del.quantity cm3/: 85.0...88.0

1000 s: (82.0...91.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

rpm : 1260...1270 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 170.0...200.0 1000 s: (166.0...204.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.30...5.50
Del.quantity cm3/: 16.0...20.0
1000 s: (13.0...23.0)
Spread cm3 : 3.00
1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

Note remarks

Test sheet : ENA 12,0 a Edition : 01.12.89 : 29.3.89 Replaces : ISO-4113 Test oil

Combination no. : 0 401 846 548

Injection pump

Pump designation : PE6P120A320RS257 EP type number : 0 411 826 075

Governor

Governor design: RQ250/1100PA877 : 0 421 801 409 Governer no.

Customer-spec. information Customer : ENASA

Engine : 96T1AZ

1st version kW : 228.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. .. C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening .

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 18.4...18.6

100 s: (18.1...18.9)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 250.0 Rack travel in mm : 5.5...5.7 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

Speed rpm: 550 Rack travel in mm: 15.40...16.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed

Aneroid pressure h: 900

: 184.0...186.0 Del.quantity

1000 : (181.0...189.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

rpm : 550 Speed Rack travel in mm : 16.0

Testing:

1st rack travel in: 9.60

rpm : 1145...1160 Speed

2nd rack travel in: 4.00

rpm : 1190...1220 Speed

4th rack travel in: 1300

rom : 0.00...1.00Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rom Rack travel in mm : 5.6

Testing:

Speed rpm Minimum rack trave: 7.10 Speed rpm : 250

Rack travel in mm : 5.50...5.70

Rack travel in mm : 2.00

: 340...380 Speed rom

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed : 600 mom

Rack travel in m: 10.90...11.00

2nd speed rpm : 1080

Rack travel in m: 10.60...10.80 d speed rpm : 720 Rack travel in m: 10.70...10.90

3rd speed

Aneroid/Altitude Compensator Test

1st version

Setting Speed

: 500 rpm hPa : 900 Pressure

: 10.90...11.00 Rack travel mm

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 8.70...9.10

2nd pressure hPa : 340

Rack travel in m: 9.30...9.40
3rd pressure hPa : 470

Rack travel in m: 10.10...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 rpm : 1080 Speed

Del.quantity cm3/: 198.0...204.0

1000 s: (195.0...207.0)

Aneroid pressure h: -

Speed rpm Del.quantity cm3/: 130.0...132.0 1000 s: (127.0...135.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.60

rpm : 1145...1160 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 130.0...150.0

1000 s: (126.0...154.0)

Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

: ENA 11,9 a1 Test sheet : 01.12.89 Edition : 24.2.89 Replaces : ISO-4113 Test oil

Combination no. : 0 401 846 550

Injection pump

Pump designation : PE6P120A320RS257 : 0 411 826 075 EP type number

Governor

Governor design. : RQV250...1050PA808

Governer no. : 0 421 813 553

Customer-spec. information : ENASA Customer

: 96 T1 CX Engine

: 228.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0.8 diameter mm

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 20.9...21.1

100 s: (20.6...21.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 250.0 2nd speed

Rack travel in mm: 5.6...5.8 Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8

Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 1.00...1.40 travel mm rpm : 350 2nd speed

: 1.90...2.50 travel mm

rpm : 700 3rd speed

: 4.50...5.10 travel mm

rpm : 1095 4th speed

: 8.00...8.20 travel mm

rpm : 1185 5th speed

: 9.00...9.40 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1110

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1030Speed Aneroid pressure h: 900

: 209.0...211.0 Del.quantity

1000 : (206.0...214.0)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 48...56

Testing:

1st rack travel in: 9.90

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1160...1190 Speed

4th rack travel in: 1300

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 13...21

Testina:

Speed : 100 rpm Minimum rack trave: 7.20 rom

Rack travel in mm : 5.60...5.80

CONSTANT REGULATION

rpm : 250...430 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 man hPa : 900 Pressure

: 10.90...11.00 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.30...8.70

2nd pressure hPa : 510
Rack travel in m: 10.40...10.50
3rd pressure hPa : 300
Rack travel in m: 9.20...9.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 rpm : 650

Del.quantity cm3/: 187.0...193.0 1000 s: (184.0...196.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 119.0...121.0 1000 s: (116.0...124.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (126.0...154.0)

Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

: RVI 9,8 h Test sheet : 01.12.89 Edition : 30.9.88 Replaces : ISO-4113 Test oil

Combination no. : 0 401 846 561

Injection pump

Pump designation : PE6P120A320RS519 EP type number : 0 411 826 145

Governor

Governor design. : RQ275/1050PA899 : 0 421 801 460 Governer no.

Customer-spec. information Customer : RVI

Engine : MIHS 06.20.45

: 185.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)
Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ., .: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 16.7...16.9

100 s: (16.4...17.2)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 275.0 2nd speed

Rack travel in mm : 5.40...5.80 Del.quantity cm3/: 1.3...1.9

100 s: (1.0...2.2)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

Aneroid pressure h: 700

: 167.0...169.0 Del.quantity 1000 : (164.0...172.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

rpm : 600 Speed Rack travel in mm: 20.0

Testina:

1st rack travel in: 10.00

rpm : 1110...1125 Speed 2nd rack travel in: 4.00 rpm : 1195...1225 Speed 4th rack travel in: 1350 rpm : 0.00...1.00 Speed LOW IDLE 1 Setting point w/out bumper spring : 275 rpm Rack travel in mm: 5.6 Testina: Speed : 200 rpm Minimum rack trave: 7.30 rpm : 275 Speed Rack travel in mm : 5.40...5.80 Rack travel in mm : 2.00 : 275...315 Speed rpm Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm Pressure hPa : 700 Rack travel mm : 11.00...11.10 Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 9.60...9.80 2nd pressure hPa : 260 Rack travel in m: 10.60...10.70 3rd pressure hPa : 220 Rack travel in m: 9.90...10.10 START CUT-OUT Speed 1/min: 195 (215) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 : 750 Speed rpm Del.quantity cm3/: 159.0...165.0 1000 s: (156.0...168.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 104.0...106.0

1mm rack travel less than full load rack tr: 10.00 rpm : 1110...1125 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0) LOW IDLE : 275 Speed rpm Rack travel in mm: -5.20...-5.60 Del.quantity cm3/: 13.0...19.0 1000 s: (10.0...22.0) cm3 : 8.00Spread 1000 s: (12.00) Remarks: : APPLICATION **Omnibus**

1000 s: (101.0...109.0)

BREAKAWAY

1st version

: 4.00...4.10 Prestroke mm BOSCH INJ. PUMP TEST SPECIFICATIONS : (3.95...4.15) Rack travel in mm : 9.00...12.00 Note remarks : 6-3-5-2-4-1 Firing order : MB 11,0 c 5 : 01.12.89 Test sheet Edition : 28.6.89 Replaces : 0-45-120-165-240-285 : ISO-4113 Phasing Test oil Combination no. : 0 401 846 749 Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 6 Injection pump Pump designation : PE6P110A320LS3805-10 : 0 411 816 740 BASIC SETTING EP type number Governor rpm: 750 Governor design. : RQ300/1150PA187-6 1st speed Governer no. : 0 421 801 155 Rack travel in mm : 11.70...11.80 Customer-spec. information Del.quantity cm3/: 11.4...11.6 : DAIMLER-BENZ Customer 100 s: (11.1...11.9) Engine : 0M421 cm3 : 0.4: 159.0 Spread 1st version kW : 2300 Rated speed 100 s: (0.7) TEST BENCH REQUIREMENTS 2nd speed rpm : 300.0 Rack travel in mm : 7.8...8.0 Test oil Del.quantity cm3/: 1.2...1.8 inlet temp. , C : 38...42 100 s: (0.9...2.0) cm3 : 0.4 100 s: (0.7) Overflow valve Spread : 1 417 413 025 GUIDE SLEEVE POSITION Inlet press., bar: 1.50 Control-lever position Degree: -1 Overflow rpm : 650 quantity min. 1/h: 100...120 Speed Rack travel in mm : 12.80...13.60 Test nozzle holder : 0 681 343 009 FULL LOAD DELIV. AT FULL LOAD STOP assembly 1st version Opening pressure, bar : 172...175 Speed rpm : 750 : 114.0...116.0 Del.quantity 1000 : (111.0...119.0) : 4.00 Test Lines : 1 680 750 015 Spread cm3 1000 : (7.00)Outside diameter RATED SPEED x Wall thickness : 6.00x1.50x600 x Length mm 1st version (A) Injection pump setting values Insp. values in parentheses Setting point:

> Speed rpm : 650 Rack travel in mm : 13.2

1st rack travel in: 10.70 Speed rpm : 1190...1200

Testing:

L22

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

2nd rack travel in: 4.00 Speed rpm : 1235...1265 4th rack travel in: 1350 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 7.9 Testina: : 100 Speed rpm Minimum rack trave: 9.50 : 300 Speed rpm Rack travel in mm : 7.80...8.00 Rack travel in mm : 2.00 rpm : 410...440 Speed FUEL DELIVERY CHARACTERISTICS 1st version : 1150 Speed rpm : 130 Del.quantity cm3/: 132.0...136.0 1000 s: (129.0...139.0) Speed rpm Spread cm3 : 5.001000 s: (8.00) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.70 Speed rpm : 1190...1200 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0) Remarks:

Note remarks

Test sheet : MB 11,0 e 5 : 12.12.89 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 846 818

Injection pump

Pump designation : PE6P120A320LS3810-10

: 0 411 826 734 EP type number

Governor

Governor design. : RQV350...1150PA720-1

: 0 421 813 539 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : 0M421A

1st version kW : 184.0 : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

: 1 680 750 067 Test lines

Outside diameter

x Wall thickness

: 6,00X1,50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 Prestroke mm

(3.95...4.15)
Rack travel in mm : 9.00...12.00

: 6-3-5-2-4-1 Firing order

: 0-45-120-165-240-285 Phasing

Tolerance + - ... 0,50 (0,75)

Time to cyl. no. : 6

BASTC SETTING

1st speed rpm: 1150

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 15.8...16.0

100 s: (15.5...16.3)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 350 2nd speed

Rack travel in mm : 4.90...5.10

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1250

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 700

Del.quantity : 130.0...163.0)

: 5.0 Spread cm3

1000 : (9.0)

RATED SPEED

1st version

Control Lever

position degrees: 58...66

Testina:

1st rack travel in: 9.70

rpm : 1175...1185 Speed 2nd rack travel in: 4.00 rpm : 1260...1290 Speed 4th rack travel in: 1360 rpm : 0.00...1.50 Speed LOW IDLE 1 Control Lever position degrees: 7...15 Testina: : 100 Speed man Minimum rack trave: 6.70 : 350 Speed man Rack travel in mm : 4.90...5.10 CONSTANT REGULATION rpm : 350...500 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version rpm : 1150 1st speed Rack travel in m: 10.70...10.80 rpm : 850 2nd speed Rack travel in m: 11.00..11.20 3rd speed rpm : 950 Rack travel in m: 10.80...11.00 Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed rpm hPa : -Pressure Rack travel mm : 10.30...10.60 Measurement 1/min: 500 Speed 1st pressure hPa : 425 Rack travel in m: 10.50...10.60 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 : 600 Speed rpm Del.quantity cm3/: 165.0...171.0 1000 s: (162.0...174.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 700 rpm : 1150 Speed Del.quantity cm3/: 128.0...131.0 *

1000 s: (125.0...134.0)

Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 141.0...143.0 1000 s: (138.0...146.0) Spread cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1175...1185

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 150.0...170.0 1000 s: (146.0...174.0)

Remarks:
* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : ENA 11,9 c Test sheet : 01.12.89 Edition : 17.2.89 Replaces : ISO-4113 Test oil : 0 401 846 860 Combination no. Injection pump Pump designation : PE6P12OA32ORS3200 EP type number : 0 411 826 766 Governor Governor design. : RQV250...1000PA808-1 : 0 421 813 660 Governer no. Customer-spec. information Customer : ENASA : 96 R1 BX Engine : 265.0 1st version kW Rated speed : 2000 TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Opening. pressure, bar : 207...210 Orifice plate diameter mm : 0,8 : 1 680 750 067 Test lines Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 3.80...3.90 Prestroke mm : (3.75...3.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4 Firing order : 0-60-120-180-240-300 Phasing Tolerance + - 0.50 (0.75)Time to cyl. no. : 1 BASIC SETTING rpm: 600 1st speed Rack travel in mm : 11.90...12.00 Del.guantity cm3/: 24.9...25.1 100 s: (24.6...25.4) cm3 : 0.5Spread 100 s: (0.9) 2nd speed rpm : 250.0 Rack travel in mm : 3.3...3.7 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6) cm3 : 0.8Spread 100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 250 1st speed : 1.00...1.40 travel mm rpm : 350 2nd speed : 2.10...2.60 travel mm rpm : 700 3rd speed : 4.70...5.30 travel mm rpm : 1055 4th speed : 7.90...8.10 travel mm rpm : 1145 5th speed : 9.00...9.40 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1070 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 600 Speed

Aneroid pressure h: 1200

Del.quantity : 249.0...254.0)

cm3 : 5.00Spread 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 50...58

Testing:

1st rack travel in: 10.90 Speed rpm: 1050...1060 2nd rack travel in: 4.00

rpm : 1130...1160 Speed

4th rack travel in: 1250

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 8...16

Testing:

Speed run . 5.00 minimum rack trave: 5.00 rnm : 250 : 100

Speed rpm : 250 Rack travel in mm : 3.30...3.70

CONSTANT REGULATION

rpm : 250...330 Speed

Aneroid/Altitude Compensator Test

1st version Settina

: 500 Speed rpm hPa : 1200 Pressure

: 11.90...12.00 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.50...8.90

2nd pressure hPa : 680

Rack travel in m: 11.30...11.40

3rd pressure hPa : 420

Rack travel in m: 9.50...9.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 rpm : 900 Speed

Del.quantity cm3/: 240.0...246.0 1000 s: (237.0...249.0)

Aneroid pressure h: -

rpm : 500

Del.quantity cm3/: 149.0...152.0

1000 s: (146.5...154.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90

rpm : 1050...1060 Speed

STARTING FUEL DELIVERY

: 100 rpm

Del.quantity cm3/: 155.0...175.0 1000 s: (151.0...179.0)

Rack travel in mm : 19.50...21.00

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : ENA 11,9 e : 01.12.89 : 17.2.89 Edition Replaces : ISO-4113. Test oil

Combination no. : 0 401 846 861

Injection pump

Pump designation : PE6P120A320RS3176-1

EP type number : 0 411 826 767

Governor

Governer no.

Governor design. : RQV250...1050PA808 : 0 421 813 553

Customer-spec. information Customer : ENASA

: 96 R1 AX Engine

: 250.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.80...3.90 : (3.75...3.95) Prestroke mm

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 650

Rack travel in mm : 12.40...12.50

Del.quantity cm3/: 21.2...21.4

100 s: (20.9...21.7)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 250.0 2nd speed

Rack travel in mm: 4.2...4.4 Del.quantity cm3/ : 2.5...3.1

100 s: (2.2...3.4)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed : 1.00...1.40 travel mm

rpm : 350 2nd speed

: 1.90...2.50 travel mm

rpm : 700 3rd speed

: 4.50...5.10 travel mm

rpm : 1095 4th speed

: 8.00...8.20 travel mm

rpm : 1185 5th speed

: 9.00...9.40 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1110

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV, AT FULL LOAD STOP

1st version

rpm : 650 Speed Aneroid pressure h: 900

Del.quantity

: 212.0...214.0 1000 : (209.0...217.0)

cm3 : 5.00Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 50...58

Testina:

1st rack travel in: 11.40 Speed rpm : 1090...1100

2nd rack travel in: 4.00

rpm : 1185...1215 Speed

4th rack travel in: 1300

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 11...19

Testing:

rpm : 100 Speed Minimum rack trave: 5.90 Speed rpm : 250

Rack travel in mm : 4.20...4.40

CONSTANT REGULATION

rpm : 250...350 Speed

Aneroid/Altitude Compensator Test

1st version

Settina

: 500 Speed rpm hPa : 900 Pressure

Rack travel mm : 12.40...12.50

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.90...10.30

2nd pressure hPa : 390

Rack travel in m: 11.90...12.00

3rd pressure hPa : 160

Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 1030 Del.quantity cm3/ : 215.0...221.0 1000 s: (212.0...224.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 151.0...153.0 1000 s: (148.0...156.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40

rrm : 1090...1100 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 155.0...175.0 1000 s: (151.0...179.0)

Rack travel in mm : 19.50...21.00

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet Edition : ENA 11,9 d

: 13.12.89 : 25.3.88 Replaces Test oil : ISO-4113

Combination no. : 0 401 846 862

Injection pump

Pump designation : PE6P110A320RS3201

EP type number : 0 411 816 753

Governor

Governor design. : RQ250/1050PA218-1

: 0 421 801 406 Governer no.

Customer-spec. information : ENASA Customer

Engine : 96 A4 AU

: 150.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 015 Test Lines

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.20...3.30 Prestroke mm : (3.15...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1030 1st speed

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 12.6...12.8

100 s: (12.3...13.1)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 250.0 2nd speed Rack travel in mm: 7.9...8.1 Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.4Spread 100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 600 Speed Rack travel in mm: 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1030 Speed

: 126.0...128.0 Del.quantity 1000 : (123.0...131.0)

: 4.00 cm3 Spread

1000 : (7.50)

RATED SPEED

1st version

Setting point:

rpm : 600 Rack travel in mm: 16.0

Testing:

1st rack travel in: 11.10

Speed rpm : 1095...1110

2nd rack travel in: 4.00

rpm : 1140...1170 Speed

4th rack travel in: 1250

rpm : 0.00...1.00Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250 Rack travel in mm: 6.0

Testing:

Speed rpm : 100 Minimum rack trave: 7.50

Speed rpm: 250
Rack travel in mm: 5.90...6.10
Rack travel in mm: 2.00
Speed rpm: 290...330

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.10

rpm : 1095...1110 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 143.0...163.0

1000 s: (139.0...167.0)

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.90...6.10

Remarks:

Note remarks

Test sheet : STE 10.0 g Edition : 20.10.89

Replaces : -

Test oil : ISO-4113

Combination no. : 0 401 846 912

Injection pump

Pump designation : PE6P110A720RS3243 EP type number : 0 411 816 770

Governor

Governor design. : RQ300/1100PA412-4

Governer no. : 0 421 801 496

Customer—spec. information Customer : STEYR

Engine: WD615.68

1st version kW : 228.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _ C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 13.70...13.80

Del.quantity cm3/: 18.3...18.5

100 s: (18.0...18.8)

Spread cm3: 0.4

100 s: (0.7)

2nd speed rpm : 300.0 Rack travel in mm : 3.9...4.1 Del.quantity cm3/ : 1.5...2.1

100 s: (1.2...2.4)

Spread cm3 : 0.4 100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 600

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1100 Aneroid pressure h: 1200

Del.quantity : 183.0...185.0 1000 : (180.0...188.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm : 16.0

Testing:

1st rack travel in: 12.70

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1240...1270

4th rack travel in: 1350 rpm : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 4.0 Testina: : 100 Speed rpm Minimum rack trave: 5.50 : 300 Speed rom Rack travel in mm : 3.90...4.10 Rack travel in mm : 2.00 : 350...390 Speed rom TORQUE CONTROL Dimension a mm Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed rpm hPa : 1200 Pressure : 13.70...13.80 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.00...10.20 2nd pressure hPa : 630 Rack travel in m: 12.90...13.00 3rd pressure hPa : 375 Rack travel in m: 10.90...11.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 rpm : 700 Speed Del.quantity cm3/: 193.0...197.0 1000 s: (190.0...200.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 119.0...121.0 1000 s: (116.0...124.0)

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 225.0...265.0 1000 s: (221.0...269.0)

LOW IDLE

: 300 Speed rpm

Rack travel in mm : 3.90...4.10 Del.quantity cm3/: 15.0...21.0 1000 s: (12.0...24.0)

cm3 : 4.50 Spread 1000 s: (7.50)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm. Permissible alteration from 2.20...2.90

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.70 rpm : 1145...1160 Speed

Note remarks

Test sheet : STE 10,0 h : 20.10.89 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 846 913

Injection pump

Pump designation : PE6P110A720RS3243 EP type number : 0 411 816 770

Governor

Governor design. : RQV250...1100PA413-5

Governer no. : 0 421 813 811

Customer-spec. information Customer : STEYR

Engine : WD615.68

1st version kW : 228.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ... 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 13.70...13.80

Del.quantity cm3/: 18.3...18.5

100 s: (18.0...18.8)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 250.0 2nd speed Rack travel in mm: 4.4...4.6
Del.quantity cm3/: 1.5...2.1
100 s: (1.2...2.4)

cm3 : 0.4Spread

100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

: 0.90...1.30 travel mm rpm : 350

2nd speed : 1.70...2.30 travel mm

rpm : 700 3rd speed

: 4.40...5.00 travel mm rpm : 1145 4th speed

: 8.30...8.50 travel mm

5th speed : 1250 rpm

: 9.50...9.90 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Aneroid pressure h: 1200 Del.quantity : 183.0...185.0 1000 : (180.0...188.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version Control Lever

position degrees: 45...53

Testing:

1st rack travel in: 12.70 Speed rpm : 1140...1150

2nd rack travel in: 4.00

rpm : 1240...1270 Speed

4th rack travel in: 1350

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 10...18

Testina:

Speed rpm : 100 Minimum rack trave: 6.00 : 250 rom

Rack travel in mm : 4.40...4.60

CONSTANT REGULATION

rpm : 250...350 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rom hPa : 1200 Pressure

Rack travel mm : 13.70...13.80

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.00...10.20

2nd pressure hPa : 630

Rack travel in m: 12.90...13.00

3rd pressure hPa : 375

Rack travel in m: 10.90...11.10

START CUT-OUT

1/min: 170 (190) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 Speed rpm : 700

Del.quantity cm3/: 193.0...197.0 1000 s: (190.0...200.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 119.0...121.0 1000 s: (116.0...124.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 225.0...265.0

1000 s: (221.0...269.0)

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

MO7

Note remarks

Test sheet : ENA 12,9 a Edition : 01.12.89

Replaces : -

Test oil : ISO-4113

Combination no. : 0 401 846 915

Injection pump

Pump designation : PE6P120A320RS3244 EP type number : 0 411 826 788

Governor

Governor design. : RQV250...1050PA808-4

Governer no. : 0 421 813 821

Customer—spec. information Customer : ENASA

Engine : 98 R1 AX

1st version kW : 331.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.30...3.40 : (3.25...3.45)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 13.10...13.20

Del.quantity cm3/: 28.7...28.9

100 s: (28.4...29.2)

Spread cm3: 0.5

100 s: (0.9)

2nd speed rpm : 250.0 Del.quantity cm3/: 2.5...3.1

100 s: (2.2...3.4)

Spread cm3 : 0.8 100 s: (1.2)

R) Setting of injection num

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250 travel mm : 1.00...1.40 2nd speed rpm : 350

travel mm : 1.90...2.50

3rd speed rpm : 700 travel mm : 4.50...5.10

4th speed rpm : 1095

_travel mm : 8.00...8.20

5th speed rpm: 1185

travel mm : 9.00...9.40

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1110

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 750 Aneroid pressure h: 1200

: 287.0...289.0 1000 : (284.0...292.0) Del.quantity

cm3 : 5.00Spread 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 51...59

Testina:

1st rack travel in: 12.10 rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1185...1215 Speed

4th rack travel in: 1300

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 13...21

Testina:

: 100 Speed rpm Minimum rack trave: 7.50 : 250 rpm

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

rpm : 250...430 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 1200 Pressure

: 13.10...13.20 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.90...11.30 2nd pressure hPa : 770

Rack travel in m: 12.60...12.70

3rd pressure hPa : 590

Rack travel in m: 11.60...11.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 1030 Del.quantity cm3/ : 275.0...281.0

1000 s: (272.0...284.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 217.0...219.0 1000 s: (214.0...222.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 150.0...170.0 1000 s: (150.0...170.0)

Rack travel in mm : 19.50...21.00

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

Omnibus

: 3.70...3.80 : (3.65...3.85) Prestroke mm BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order Test sheet : DAF 11,7 i Edition : 24.11.89 Replaces : 0-60-120-180-240-300 Test oil : ISO-4113 Phasing Combination no. : 0 401 846 917 Tolerance + - ... : 0.50 (0.75)Injection pump BASIC SETTING Pump designation : PE6P120A320RS3183 rpm: 850 EP type number : 0 411 826 754 1st speed Governor Governor design. : RQV250...1000PA851-4 Rack travel in mm : 12.50...12.60 Governer no. : 0 421 813 828 Del.guantity cm3/: 20.9...21.1 Customer-spec. information 100 s: (20.6...21.4) Customer : DAF cm3 : 0.5: WS 268 Spread Engine 100 s: (0.9) 1st version kW : 268.0 : 2000 Rated speed rpm : 250.0 2nd speed Rack travel in mm: 6.5...6.7 TEST BENCH REQUIREMENTS Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3) Test oil inlet temp. _, C . : 38...42 cm3 : 0.8Spread 100 s: (1.2) Overflow valve : 1 417 413 025 (B) Setting of injection pump with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL 1st speed rpm: 250 Test nozzle holder : 1.40...1.60 : 1 688 901 019 travel mm assembly rpm : 400 2nd speed : 3.20...3.60 travel mm Opening pressure, bar rpm : 800 : 207...210 3rd speed : 5.80...6.20 travel mm rpm : 1000 4th speed Orifice plate : 7.90...8.10 travel mm diameter mm : 0,8 GUIDE SLEEVE POSITION : 1 680 750 067 Control-lever position Test lines Degree: -1 rpm : 1025 Outside diameter Speed x Wall thickness Rack travel in mm : 15.20...17.80 : 6.00x1.50x1000 x Length mm FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version rpm : 850 Speed

Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27 Del.quantity : 207.0...214.0) : 5.00 Spread cm3 1000 : (9.00)

Aneroid pressure h: 1000 Del.quantity : 209.0...211.0

RATED SPEED

1st version Control lever

position degrees: 117...125

Testing:

1st rack travel in: 11.50

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

Speed rpm: 1130...1160 4th rack travel in: 1250 Speed

Speed rpm : 0.00...1.40

LOW IDLE 1 Control lever

position degrees: 82...90

Testing:

: 100 Speed rpm Minimum rack trave: 7.50 : 250 rpm

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

rom : 275...385 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 600 rpm Pressure

hPa : 1000 mm : 12.50...12.60 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -Rack travel in m: 11.00...11.20 2nd pressure hPa : 470

Rack travel in m: 12.10...12.20

3rd pressure hPa : 380

Rack travel in m: 11.40...11.60

START CUT-OUT

1/min : 200 (0) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 600 Speed

Del.quantity cm3/: 164.0...166.0 1000 s: (161.0...169.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 260.0...300.0

1000 s: (256.0...304.0)

LOW IDLE

Speed rpm

Rack travel in mm : 6.50...6.70

Del.quantity cm3/: 14.0...20.0 1000 s: (11.0...23.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

M11

: 2.60...2.70 : (2.55...2.75) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Note remarks Firing order : 1-5-3-6-2-4 : VOL 12,2 e : 01.12.89 Test sheet Edition Replaces : 0-60-120-180-240-300 : ISO-4113 Phasina Test oil Combination no. : 0 401 846 919 Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 1 Injection pump Pump designation : PE6P120A320RS3118-7 : 0 411 826 790 BASIC SETTING EP type number Governor Governor design. : RQV250...950PA921-20 rpm: 700 1st speed : 0 421 813 838 Governer no. Rack travel in mm : 11.30...11.40 Customer-spec. information Del.guantity cm3/: 19.4...19.6 : VOLVO-TRUCK Customer 100 s: (19.1...19.9) Engine : TD122FTQ : 221.0 Spread cm3 : 0.51st version kW : 1900 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 250.0 2nd speed Rack travel in mm : 3.3...3.5 Del.quantity cm3/ : 1.8...2.3 Test oil inlet temp. , C : 38...42 100 s: (1.5...2.5) cm3 : 0.5Overflow valve Spread 100 s: (0.7) : 1 417 413 025 (B) Setting of injection pump Inlet press., bar: 1.50 with governor Test nozzle holder : 1 688 901 019 GUIDE SLEEVE TRAVEL assembly rpm : 250 1st speed : 1.00...1.40 travel mm Openina : 207...210 2nd speed rpm : 350 pressure, bar travel mm : 2.20...2.80 Orifice plate 3rd speed rpm : 750 : 0,8 travel mm : 6.30...6.70 diameter mm rpm : 995 4th speed : 8.20...8.40 travel mm rpm : 1060 Test lines : 1 680 750 067 5th speed : 9.30...9.70 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00X1.50X1000 Control-lever position x Lenath mm Degree: -1 rpm : 990 (A) Injection pump setting values Rack travel in mm : 15.20...17.80 Insp. values in parentheses Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values

1st version

Aneroid pressure h: 900

Speed

rpm : 700

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 194.0...196.0 Del.quantity 1000 : (191.0...199.0)

: 5.00 cm3 Spread : (9.00) 1000

RATED SPEED

1st version Control Lever

position degrees: 60...68

Testing:

1st rack travel in: 10.30

rpm : 990...1000 Speed

2nd rack travel in: 4.00

rpm : 1035...1065 Speed

4th rack travel in: 1150

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 3...11

Testina:

: 100 Speed rpm Minimum rack trave: 4.80 Speed rpm

Rack travel in mm : 3.30...3.50

CONSTANT REGULATION

rpm : 250...350 Speed

Aneroid/Altitude Compensator Test

1st version

Settina

: 500 Speed rom hPa : 900 Pressure

Rack travel mm : 11.30...11.40

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.00...9.20

2nd pressure hPa : 85

Rack travel in m: 9.20...9.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 700 Speed

Del.quantity cm3/: 149.0...151.0 1000 s: (146.0...154.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.30

rpm : 990...1000 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 240.0...280.0 1000 s: (236.0...284.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 3.30...3.50
Del.quantity cm3/: 18.0...23.0

1000 s: (15.5...25.5)

cm3 : 5.00 Spread

1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

: 2.60...2.70 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Note remarks : VOL 12,2 e1 : 01.12.89 Test sheet Edition Replaces Test oil : ISO-4113 Phasing Combination no. : 0 401 846 920 Time to cyl. no. : 1 Injection pump Pump designation: PE6P120A320RS3118-8 EP type number : 0 411 826 791 BASIC SETTING Governor Governor design. : RQV250...950PA921-21 1st speed : 0 421 813 839 Governer no. Customer-spec. information : VOLVO-TRUCK Customer : TD122FKQ Engine 1st version kW : 254.0 Spread : 1900 Rated speed TEST BENCH REQUIREMENTS 2nd speed Test oil inlet temp. , C : 38...42 Overflow valve Spread : 1 417 413 025 Inlet press., bar: 1.50 with governor Test nozzle holder : 1 688 901 019 assembly GUIDE SLEEVE TRAVEL 1st speed Openina travel mm : 207...210 pressure, bar 2nd speed travel mm Orifice plate 3rd speed diameter mm : 0,8 travel mm 4th speed travel mm : 1 680 750 067 5th speed Test lines travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 6.00x1.50x1000 (A) Injection pump setting values

: (2.55...2.75) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 : 0-60-120-180-240-300 Tolerance + - ... : 0.50 (0.75)rom: 700 Rack travel in mm : 13.20...13.30 Del.quantity cm3/: 23.4...23.6 100 s: (23.1...23.9) cm3 : 0.5100 s: (0.9) rpm : 250.0 Rack travel in mm: 3.3...3.5 Del.quantity cm3/: 1.8...2.3 100 s: (1.5...2.5) cm3 : 0.5 100 s: (0.7) (B) Setting of injection pump rpm : 250 : 1.00...1.40 rpm : 350 : 2.20...2.80 rpm : 750 : 6.30...6.70 rpm : 995 : 8.20...8.40 rpm : 1060 : 9.30...9.70 Control-lever position Degree: -1 rpm : 990 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 700 Speed Aneroid pressure h: 900

Insp. values in parentheses Set equal delivery quant.

per values ____

Test pressure, bar: 25...27

BEGINNING OF DELIVERY

Del.quantity : 234.3...239.5)

: 5.00 cm3 Spread

: (9.00) 1000

RATED SPEED

1st version Control lever

position degrees: 61...69

Testing:

1st rack travel in: 12.20

rpm : 990...1000 Speed

2nd rack travel in: 4.00

rpm : 1050...1080 Speed

4th rack travel in: 1150

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever

position degrees: 3...11

Testing:

: 100 Speed rpm Minimum rack trave: 4.80 : 250 rpm

Rack travel in mm : 3.30...3.50

CONSTANT REGULATION

rpm : 250...350 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 900 Pressure

: 13.20...13.30 Rack travel mm

Measurement

1/min : 500Speed

1st pressure hPa : -

Rack travel in m: 9.00...9.20

2nd pressure hPa : 85

Rack travel in m: 9.20...9.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm_: 700 Speed

Del.quantity cm3/: 149.0...151.0 1000 s: (146.0...154.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20

rpm : 990...1000 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 240.0...280.0

1000 s: (236.0...284.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 3.30...3.50

Del.quantity cm3/: 18.0...23.0 1000 s: (15.5...25.5)

cm3 : 5.00Spread

1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

Note remarks

: KHD 12,8 a : 24.11.89 Test sheet Edition : 12.9.86 Replaces : ISO-4113 Test oil

Combination no. : 0 401 848 780

Injection pump

Pump designation: PE8P120A920/5LS3174 EP type number : 0 411 828 719

Governor

Governor design. : RQV300...1150PA802

: D 421 813 538 Governer no.

Customer-spec. information : KHD Customer

: BF8L513C Engine

: 265.0 1st version kW : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 15.00...19.00 : 1-8-7-2-6-5-4-3 Firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 1150

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 16.6...16.8

100 s: (16.3...17.1)

cm3 : 0.6Spread

100 s: (1.0)

2nd speed rpm : 300.0 Rack travel in mm : 7.1...7.3 Del.quantity cm3/ : 2.0...2.6

100 s: (1.7...2.9)

cm3 : 0.9Spread 100 s: (1.3)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.00...1.40 travel mm

2nd speed 400 rom

: 2.20...2.80 : 550 travel mm

3rd speed rpm

: 3.50...4.10 travel mm

: 1200 4th speed rpm

: 8.20...8.40 travel mm

: 1285 5th speed rpm

: 9.00...9.40 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1220 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed

Aneroid pressure h: 900

: 166.0...168.0 Del.quantity 1000 : (163.0...171.0)

Spread : 6.00 cm3

1000 : (10.00)

RATED SPEED

1st version Control lever

position degrees: 50...58

Testina:

1st rack travel in: 12.20

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1310...1340 4th rack travel in: 1450

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 15...23

Testina:

Speed : 100 rpm Minimum rack trave: 8.80 Speed rpm: 300

Rack travel in mm : 7.10...7.30

CONSTANT REGULATION

rpm : 300...510 Speed

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 13.20...13.30

2nd speed rpm : 700

Rack travel in m: 13.50...13.70

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rom hPa : 900 Pressure

: 13.40...13.60 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 12.30...12.50 2nd pressure hPa : 500

Rack travel in m: 13.10...13.20

START CUT-OUT

Speed

1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm: 700 Del.quantity cm3/: 167.0...171.0 1000 s: (164.0...174.0)

Aneroid pressure h: -Speed rpm : 500

Del.quantity cm3/: 134.0...136.0

1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

: 100 rpm

Del.quantity cm3/: 170.0...190.0

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

Special-purpose vehicle

Note remarks

: MB 14,7 d 7 : 03.11.89 Test sheet Edition : 28.11.88 Replaces : ISO-4113 Test oil

: 0 401 848 800 Combination no.

Injection pump

Pump designation : PE8P110A320LS3842-1 : 0 411 818 716 EP type number

Governor

Governor design.: RQV350..1050PA378-7

: 0 421 813 714 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442

1st version kW : 213.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10

(3.95...4.15)

Rack travel in mm : 9.00...12.00 : 8- 7- 2- 6- 3- 5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rom: 750

Rack travel in mm : 12.70...12.80

Del.guantity cm3/: 12.4...12.6

100 s: (12.1...12.8)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 350.02nd speed Rack travel in mm: 8.0...8.3

Del.quantity cm3/: 1.5...2.1 100 s: (1.2...2.3)

cm3 : 0.4Spread

100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

travel mm : 1.50...1.70

2nd speed : 800 man : 4.90...5.30 travel mm

3rd speed rpm : 1100

: 7.90...8.50 travel mm

1150 4th speed rpm

: 8.90...9.70 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

Speed rpm : 1110 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 750 Speed

124.0...126.0 Del.quantity

1000 : (121.5...128.5)

cm3 : 4.00 Spread

1000 : (7.00)

RATED SPEED

1st version Control lever

position degrees: 56...64

Testina:

1st rack travel in: 11.70

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

: 1140...1170 Speed rpm

4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 10...18

Testing:

Speed rpm Minimum rack trave: 9.50 : 350 Speed rom

Rack travel in mm : 8.00...8.30

CONSTANT REGULATION

rpm : 350...450 Speed

START CUT-OUT

1/min: 270 (290) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed : 1050 rpm

Del.quantity cm3/: 137.0...141.0 1000 s: (134.0...144.0)

Spread cm3 : 5.00

1000 s: (8.00)

: 1050 rpm

Del.quantity cm3/: 87.0...89.0 *

1000 s: (84.0...92.0) cm3 : 6.00

Spread

1000 s: (9.00)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.70

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0)

Remarks:

* = Set at reduced-delivery stop.

M19

Note remarks

Test sheet : BAO 21,2 b1 : 02.10.89 Edition

Replaces

Test oil : ISO-4113

: 0 401 848 807 Combination no.

Injection pump

Pump designation: PE8P130A520/4RS3126

: 0 411 838 707 EP type number

Governor

Governor design. : RQV400...750PA934-1

: 0 421 813 817 Governer no.

Customer-spec. information : BAUDOUIN Customer

: 8P15 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 074 Test lines

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1- 2- 4- 5- 6- 3-7-8

Phasing : 0-45-90-135-180-225-

270-315

Time to cyl. no. : 1

BASIC SETTING

Firing order

rpm: 700 1st speed

Rack travel in mm : 9.30...9.40

Del.quantity cm3/: 19.2...19.5

100 s: (18.8...19.8)

cm3 : 0.6Spread

100 s: (1.0)

rpm : 400.02nd speed Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 2.3...2.9

100 s: (1.9...3.3)

Spread cm3 : 1.0100 s: (1.4)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 400 1st speed : 0.90...1.10 travel mm

: 475 2nd speed rpm

: 1.90...2.10 travel mm

3rd speed rpm : 600

: 1.90...2.10 travel mm

rpm : 750 4th speed

: 5.00...6.00 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 192.0...195.0 Del.quantity 1000 : (188.5...198.5)

cm3 : 6.00 Spread

1000 : (10.00)

RATED SPEED

1st version

Control lever

position degrees: 46...54

M20

Testing:

1st rack travel in: 8.30 Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 770...780

4th rack travel in: 900

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 18...26

Testing:

Speed rpm : 100 Minimum rack trave: 6.50

Speed : 400 rpm

Rack travel in mm : 4.90...5.10

START CUT-OUT

1/min: 340 (360) Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.30

rpm : 750...755 Speed

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

APPLICATION

Generator

Note remarks

: KHD 16,0 d4 Test sheet : 02.10.89 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 849 730

Injection pump

Pump designation : PE10P110A920/5LS3164

EP type number : 0 411 819 708

Governor

Governor design. : RQV300...1075PA821

: 0 421 813 562 Governer no.

Customer-spec. information Customer : KHD

: BF10L513 Engine

1st version kW : 250.0 : 2150 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1- 10- 9- 4- 3- 6-Firing order

5- 8- 7- 2

: 0-27-72-99-144-171-Phasing

216-243-288-315

Tolerance $+ - \dots = 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

rpm: 1075 1st speed

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 12.4...12.6

100 s: (12.1...12.9)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm: 300.0 Rack travel in mm: 7.0...7.2 Del.quantity cm3/: 1.2...1.8

100 s: (0.9...2.1)

cm3 : 0.4Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.00...1.40 travel mm rpm : 450 2nd speed : 2.90...3.40 travel mm

3rd speed rpm : 800 : 5.00...5.50 travel mm

rpm : 1100 4th speed

travel mm : 8.00...8.20

rpm : 1200 : 9.10...9.50 5th speed

travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1120 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1075
Aneroid pressure h: 750
Del.quantity : 124.0...126.0 Del.quantity : 124.0...129.0)

cm3 : 4.00Spread

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 50...58

Testing:

1st rack travel in: 10.20

rpm : 1105...1115 Speed

2nd rack travel in: 4.00

Speed rpm: 1200...1230 4th rack travel in: 1300

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 14...22

Testina:

: 100 Speed rom Minimum rack trave: 8.50 : 300 Speed rpm

Rack travel in mm : 7.00...7.20

CONSTANT REGULATION

rpm : 300...440 Speed

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

1st speed rpm : 650

Rack travel in m: 11.40...11.50

2nd speed rpm : 1075

Rack travel in m: 11.20...11.30 3rd speed rpm : 940

Rack travel in m: 11.30...11.40

Aneroid/Altitude Compensator Test

1st version

Setting Speed

: 500 rpm hPa : 750 Pressure

Rack travel mm : 11.40...11.50

Measurement

1/min : 500Speed

1st pressure hPa : -

Rack travel in m: 11.10...11.20

2nd pressure hPa : 400

Rack travel in m: 11.30...11.40

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750

Speed rpm : 650

Del.quantity cm3/: 128.0...132.0 1000 s: (125.0...135.0)

Aneroid pressure h: -

rpm : 450 Speed

Del.quantity cm3/: 112.0...116.0 1000 s: (110.0...118.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20

rpm : 1105...1115 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 135.0...165.0

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

: MAN 18,2 f Test sheet : 02.10.89 Edition

Replaces

: ISO-4113 Test oil

: 0 401 849 744 Combination no.

Injection pump

Pump designation: PE10P120A520/4LS3849

: 0 411 829 708 EP type number

Governor

Governor design. : RQ750PA663-7 : 0 421 801 331 Governer no.

Customer—spec. information : MAN Customer

: D2840 LE Engine

1st version kW : 405.0 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp., C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

: 0.8 diameter mm

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.20...4.30 Prestroke mm

: (4.15...4.35)

Rack travel in mm : 9.00...12.00 : 10- 9- 4- 1-- 6- 3- 5-7 Firing order

: 0-45-72-117-144-189-216-261-288-333 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

rom: 700 1st speed

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 23.6...23.8

100 s: (23.3...24.1)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 4.5...4.9 Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8Spread

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 236.0...238.0 Del.quantity 1000 : (233.0...241.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 11.30 rpm : 750...755 Speed 2nd rack travel in: 4.00

rpm : 790...803 Speed

4th rack travel in: 950

rpm : 0.00...1.00 Speed

STARTING FUEL DELIVERY

Speed

rpm : 100

Remarks:

: MAN-NR. 2-7975

APPLICATION

Generator set

Note remarks

: MAN 18,2 g Test sheet : 09.11.89 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 849 746

Injection pump

Pump designation: PE10P120A520/4LS3855

EP type number : 0 411 829 709

Governor

Governor design. : RQV300...1000PA838 Governer no. : 0 421 813 585

Customer-spec. information Customer : MAN

: D2840LF/460 Engine

: 338.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.90...4.00

: (3.85...4.05) Rack travel in mm : 9.00...12.00

Firing order : 10-9-4-1--6-3-5-

: 0-45-72-117-144-189-216-261-288-333 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 20.4...20.6

100 s: (20.1...20.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm : 6.0...6.2 Del.quantity cm3/ : 1.7...2.3 100 s: (1.4...2.6)

cm3 : 0.8 Spread

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.00...1.40 travel mm rpm : 500 2nd speed

: 3.10...3.50 rpm : 850 travel mm

3rd speed : 6.60...6.90 travel mm

4th speed rpm : 1000

: 7.70...7.90 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1150 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed Aneroid pressure h: 1003 Del.quantity : 204.0...206.0 : 5.00 Spread cm31000 : (9.00) RATED SPEED 1st version Control lever position degrees: 49...57 Testing: 1st rack travel in: 10.30 rpm : 1040...1050 Speed 2nd rack travel in: 4.00 rpm : 1115...1145 Speed 4th rack travel in: 1250 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 13...21 Testing: Speed : 100 rom Minimum rack trave: 7.60 : 300 rpm Rack travel in mm : 6.00...6.20 CONSTANT REGULATION rpm : 335...445 Speed Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed rpm Pressure hPa : 1000 : 11.30...11.40 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.10...10.20 2nd pressure hPa : 380

1000 : (201.0...209.0) Rack travel in m: 10.40...10.50 3rd pressure hPa : 500 Rack travel in m: 10.90...11.10 START CUT-OUT

1/min: 230 (250) Speed FUEL DELIVERY CHARACTERISTICS 1st version

Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 144.0...146.0 1000 s: (141.0...149.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.30 rpm : 1040...1050 Speed STARTING FUEL DELIVERY rpm : 100 Speed bel.quantity cm3/: 190.0...210.0 1000 s: (186.0...214.0)

: 300 Speed rpm Rack travel in mm : 6.00...6.20 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) cm3 : 8.00Spread

1000 s: (12.00)

LOW IDLE

Remarks: : MAN-NR. 2-7779

M27

Note remarks

: MAN 18,2 f1 Test sheet : 02.01.90 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 849 748

Injection pump

Pump designation: PE10P120A520/4LS3849

EP type number : 0 411 829 708

Governor

: RQ750PA947 Governor design. Governer no. : 0 421 801 513

Customer-spec, information Customer : MAN

: D2840 LF Engine

: 352.0 1st version kW : 1500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30 : (4.15...4.35)

Rack travel in mm : 9.00...12.00

: 10- 9- 4- 1- 8-- 6- 3- 5- 2 Firing order

: 0-45-72-117-144-189-216-261-288-333 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rom: 700

Rack travel in mm : 12.30...12.40

Del.guantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 4.3...4.7 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

: 229.0...231.0 Del.quantity 1000 : (226.0...234.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 11.30

rpm : 750...755 Speed 2nd rack travel in: 4.00 rpm : 790...803 Speed

4th rack travel in: 950

rpm : 0.00...1.00Speed

Remarks:

: MAN-NR. 2-7975

APPLICATION

Generator set



Note remarks

: STE 9,7 b 1 : 08.09.89 Test sheet Edition : 12.9.86 Replaces : ISO-4113 Test oil

Combination no. : 0 401 856 700

Injection pump

Pump designation : PE6P110A721RS3101 EP type number : 0 411 816 725

Governor

Governor design. : RQ300/1200PA412 Governer no. : 0 421 801 172

Customer-spec. information Customer : STEYR

: WD615.67 Engine

1st version kW : 206.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. .. C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm : (2.75...2.95) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance $+ - \dots : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

rpm: 1200 1st speed

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 16.2...16.4

100 s: (15.9...16.7)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0 Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.0)

cm3 : 0.4Spread 100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 600

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200Speed Aneroid pressure h: 700

Del.quantity : 162.0...164.0 1000 : (159.0...167.0)

Spread

cm3 : 4.00 1000 : (7.50)

RATED SPEED

1st version

Setting point:

rpm : 600 Speed Rack travel in mm: 16.0

Testing:

1st rack travel in: 11.00 Speed rpm : 1245...1260

2nd rack travel in: 4.00

rpm : 1325...1355 Speed

4th rack travel in: 1450 Speed rpm : 0.00...1.00 LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 6.0 Testing: Speed rpm : 100 Minimum rack trave: 7.50 rpm : 300 Speed Rack travel in mm : 5.90...6.10 Rack travel in mm: 2.00 rpm : 405...445 Speed TORQUE CONTROL Dimension a mm : ? Torque control curve - 1st version rpm : 1200 1st speed Rack travel in m: 12.00...12.10 2nd speed rpm : 600 Rack travel in m: 12.40...12.70 rpm : 985 3rd speed Rack travel in m: 12.30...12.50 4th speed rpm : 1075 Rack travel in m: 12.20...12.40 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : 700 Pressure : 12.40...12.60 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.80...10.00 2nd pressure hPa : 420 Rack travel in m: 11.50...11.60 3rd pressure hPa : 330 Rack travel in m: 10.20...10.50 FUEL DELIVERY CHARACTERISTICS 1st version

BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.00 rpm : 1245...1260 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 205.0...235.0 1000 s: (201.0...239.0) Rack travel in mm: 18.80...19.20 Remarks:

Speed

Aneroid pressure h: 700

Aneroid pressure h: -

Speed rpm : 700 Del.quantity cm3/: 165.0...169.0

rpm : 700

Del.quantity cm3/: 120.0...122.0 1000 s: (117.0...125.0)

1000 s: (163.0...171.0)

Note remarks

Test sheet : MB 21,9 s : 15.08.89 Edition : 12.9.86 Replaces : ISO-4113 Test oil

Combination no. : 0 401 870 704

Injection pump

Pump designation : PE12P120A320LS3836-1

EP type number : 0 411 820 718

Governor

Governor design. : RSV350...750POA824-6

Governer no. : 0 421 833 232

Customer—spec. information

: DAIMLER-BENZ Customer

Engine : OM 424 A

1st version kW : 348.0 : 1500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow |

quantity min. 1/h: 150...170

Test nozzle holder

: 1 688 901 019 assembly

Openina |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 Prestroke mm

: (3.95...4.15)

Rack travel in mm : 9.00...12.00

: 12- 1- 5- 9- 8- 3-Firing order

4- 11- 10- 2- 6- 7

Phasing

: 0-45-60-105-120-165-

180-225-240-285-300-

345

Tolerance + - ., .: 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 19.3...19.5

100 s: (19.0...19.8)

cm3 : 0.5Spread

100 s: (0.8)

rpm : 350.0 2nd speed

Rack travel in mm: 4.2...4.8 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8Spread

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 193.0...195.0 Del.quantity 1000 : (190.0...198.0)

: 5.00 cm3 Spread

1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 27...35

Testing:

1st rack travel in: 10.90 Speed rpm : 750...755 2nd rack travel in: 4.00 rpm : 775...788 Speed

4th rack travel in: 900

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 8...16

Setting point w/out bumper spring

Speed rpm: 350 Rack travel in mm: 4.5

Testing:

Speed rpm: 100
Minimum rack trave: 17.50
Speed rpm: 350
Rack travel in mm: 4.20...4.80

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.90 Speed rpm : 750...755 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 170.0...190.0 1000 s: (166.0...194.0)

Remarks:

Observe VDT-I-420/120

APPLICATION

Generator

Note remarks

: DAF 8,3 o11 Test sheet : 20.06.89 Edition : 21.4.89 Replaces Test oil : ISO-4113

Combination no. : 0 401 876 316

Injection pump

Pump designation : PE6P100A720RS447 : 0 411 806 191 EP type number

Governor

Governor design. : RSV250...1200P5A509-

: 0 421 833 199 Governer no.

Customer-spec. information Customer : DAF

: DHT 825 Engine

1st version kW : 162.0 : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _ C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening .

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.20...3.30 Prestroke mm

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.30 (0.75)

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 11.40...11.50

Del.guantity cm3/: 11.8...12.0

100 s: (11.6...12.2)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 250.0 Rack travel in mm : 5.2...5.4 Del.quantity cm3/: 0.8...1.2 100 s: (0.5...1.4)

cm3 : 0.3 Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 1000 Aneroid pressure h: 700

Anerow p. 1000 Del.quantity : 118.5...120.5

: (116.5...122.5) : 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control Lever

position degrees: 58...66

Testing:

1st rack travel in: 10.40 Speed rpm : 1240...1250

2nd rack travel in: 4.00

rpm : 1300...1330 Speed

3rd rack travel in: 4.00 rpm : 1325...1355 Speed 4th rack travel in: 1530 rpm : 0.30...1.40Speed LOW IDLE 1 Control Lever position degrees: 22...30 Setting point w/out bumper spring : 250 rom Rack travel in mm: 4.8 : 250 Speed rpm Rack travel in mm : 5.20...5.40 Rack travel in mm : 2.00 : 540...640 Speed rom TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 11.60...11.70 2nd speed rpm : 400 Rack travel in m: 11.60...11.80 3rd speed rpm : 300 Rack travel in m: 11.90...12.40 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 700 Pressure : 11.40...11.50 Rack travel mm Measurement 1/min : 600Speed 1st pressure hPa : -Rack travel in m: 10.40...10.60 2nd pressure hPa : 315 Rack travel in m: 11.10...11.20 3rd pressure hPa : 225 Rack travel in m: 10.50...10.90 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -Speed rpm : 600 Del.quantity cm3/: 92.5...96.5 1000 s: (90.0...99.0)

full load rack tr: 10.40 Speed rpm : 1240...1250

STARTING FUEL DELIVERY

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.20...5.40
Del.quantity cm3/: 8.0...12.0
1000 s: (5.5...14.5)
Spread cm3 : 3.50

Remarks:

:

1000 s: (5.50)

BREAKAWAY

1st version

1mm rack travel less than

Note remarks

Test sheet : VOL 7,1 c
Edition : 15.08.89
Replaces : 24.2.89
Test oil : ISO-4113

Combination no. : 0 401 876 321

Injection pump

Pump designation : PE6P110A320RS497 EP type number : 0 411 816 165

Governor

Governor design. : RSV200...1200P1A374-

1

Governer no. : 0 421 833 204

Customer—spec. information Customer : VOLVO

Engine : TD71A

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening 1 4 1

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \dots : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 11.6...11.8

100 s: (11.3...12.1)

Spread cm3: 0.4

100 s: (0.7)

2nd speed rpm : 200.0 Rack travel in mm : 5.4...5.6 Del.quantity cm3/ : 1.6...2.2

100 s: (-)

Spread cm3 : 0.3 100 s: (0.6)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 700 Aneroid pressure h: 900

Del.quantity : 116.0...118.0 1000 : (113.0...121.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 51...59

Testing:

1st rack travel in: 10.80 Speed rpm: 1210...1220

2nd rack travel in: 4.00 Speed rpm : 1240...1270

4th rack travel in: 1410

rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 13...21 Setting point w/out bumper spring : 200 Speed rpm Rack travel in mm: 5.0 Speed rpm : 200
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00 : 280...340 Speed rpm Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : 900 Pressure : 11.80...11.90 Rack travel mm Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 9.80...10.00 2nd pressure hPa : 675 Rack travel in m: 11.60...11.70 3rd pressure hPa : 200 Rack travel in m: 10.10...10.30 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 700 Speed Del.quantity cm3/: 82.0...85.0 1000 s: (79.0...88.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.80 Speed rpm : 1210...1220 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 195.0...225.0

1000 s: (191.0...229.0)

Rack travel in mm : 20.00...21.00

Speed rpm : 200
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 16.0...22.0
Spread cm3 : 3.00 1000 s: (6.00) Remarks: Delivery-valve spring pre-tension = 2.40...2.60 mm. Permissible alteration from 2.20...2.90

N₀9

LOW IDLE

Note remarks

: VOL 7,1 c 1 : 02.10.89 Test sheet Edition : 9.12.88 Replaces Test oil : ISO-4113

: 0 401 876 322 Combination no.

Injection pump

Pump designation : PE6P110A320RS497 : 0 411 816 165 EP type number

Governor

Governor design. : RSV200...1200P1A374-

: 0 421 833 205 Governer no.

Customer-spec. information Customer : VOLVO

: TJD71A Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. .. C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm : (2.95...3.15)

Rack travel in mm : 9.00...<u>1</u>2.00

: 1-5-3-6-Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 11.70...11.80

Del.guantity cm3/: 11.6...11.8

100 s: (11.3...12.1)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 200.0 Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 1.6...2.2

100 s: (-) cm3 : 0.3Spread

100 s: (0.6)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

FLEL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed Aneroid pressure h: 900

: 116.0...118.0 Del.quantity

1000 : (113.0...121.0)

cm3 : 4.00 1000 : (7.50) Spread

RATED SPEED

1st version Control lever

position degrees: 54...62

Testina:

1st rack travel in: 10.70

rpm : 1240...1250 Speed

2nd rack travel in: 4.00

Speed rpm : 1290...1320 4th rack travel in: 1420

rpm : 0.30...1.40 Speed

LOW IDLE 1

Control lever

position degrees: 13...21

Setting point w/out bumper spring

: 200 rpm Rack travel in mm: 4.8 : 200 Speed rpm

Rack travel in mm: 4.70...4.90

Rack travel in mm : 2.00 : 280...340 Speed rom

Aneroid/Altitude

Compensator Test

1st version Settina

: 500 Speed rpm hPa : 900 Pressure

: 11.70...11.80 Rack travel mm

Measurement

1/min: 500 Speed

Rack travel in m: 8.80...9.00

2nd pressure hPa : 800

Rack travel in m: 11.60...11.70 3rd pressure hPa : 270

Rack travel in m: 8.90...9.30

FUEL DELIVERY CHARACTERISTICS

1st version

: 700 Speed rpm

Del.quantity cm3/: 66.0...68.0

1000 s: (63.0...71.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.70

rpm : 1240...1250 Speed

STARTING FUEL DELIVERY

: 100 rpm

Del.quantity cm3/: 185.0...215.0 Rack travel in mm : 20.00...21.00

LOW IDLE

: 200 Speed rpm

Rack travel in mm : 5.20...5.40

Del.quantity cm3/: 16.0...22.0 Spread cm3: 3.00 1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.
Permissible alteration from 2.20...2.90

Note remarks

: ENA 10,1 f Test sheet Edition : 13.12.89 : 24.2.89 Replaces

: ISO-4113 Test oil

Combination no. : 0 401 876 332

Injection pump

Pump designation : PE6P100A820LS130 EP type number : 0 411 806 179

Governor

Governor design. : RSV250...1000P1A532

Governer no. : 0 421 833 273

Customer-spec. information Customer : ENASA

: 9105.42.25.21 Engine

1st version kW : 113.0 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening .

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm : (2.75...2.95) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance $+ - \dots : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

rpm : 750 1st speed

Rack travel in mm : 11.90...12.00

Del.guantity cm3/: 11.3...11.5

100 s: (11.1...11.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0 Rack travel in mm : 7.9...8.1 Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 750 : 113.0...115.0 Del.quantity 1000 : (111.0...117.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 34...42

Testing:

1st rack travel in: 10.90 Speed rpm : 790...800 2nd rack travel in: 4.00 rpm : 815...845 Speed

3rd rack travel in: 4.00 Speed rpm: 815...845 4th rack travel in: 1000 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 13...21 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 5.5 Testing: : 100 Speed rpm Minimum rack trave: 19.50 Speed rpm : 250 Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 rpm : 330...390 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 750 1st speed Rack travel in m: 11.90...12.00 rom : 450 2nd speed Rack travel in m: 11.90...12.00 3rd speed rpm : 300 Rack travel in m: 13.20...13.80 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.90 rpm : 790...800 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 260.0...280.0 1000 s: (256.0...284.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 250 Rack travel in mm : 5.90...6.10 Remarks:

APPLICATION

Generator set

Note remarks

Test sheet : ENA 10.1f16 Edition : 02.10.89

Replaces : -

Test oil : ISO-4113

Combination no. : 0 401 876 332P

Injection pump

Pump designation : PE6P100A820LS130 EP type number : 0 411 806 179

Governor

Governor design. : RSV250...1000P1A532

Governer no. : 0 421 833 273

Customer—spec. information Customer : ENASA

Engine : 9105.07

1st version kW : 105.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \dots : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 13.30...13.40

Del.quantity cm3/: 14.0...14.2

100 s: (13.8...14.4)

Spread cm3: 0.3

100 s: (0.6)

2nd speed rpm : 250.0 Rack travel in mm : 7.9...8.1 Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 700

Del.quantity : 140.5...142.5

1000 : (138.5...144.5) Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 38...46

Testing:

1st rack travel in: 12.30 Speed rpm : 735...745 2nd rack travel in: 4.00

Speed rpm : 780...810

3rd rack travel in: 4.00 rpm : 790...820 Speed 4th rack travel in: 1000 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring rpm : 250 Rack travel in mm: 5.5 Testing: : 100 Speed rpm Minimum rack trave: 19.50 : 250 Speed rpm Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 rpm : 330...390 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 700 1st speed Rack travel in m: 13.30...13.40 2nd speed rpm : 450 Rack travel in m: 13.30...13.40 d speed rpm : 290 3rd speed rpm Rack travel in m: 14.60...15.20 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.30 rpm : 735...745 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 260.0...280.0 1000 s: (256.0...284.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 250 Rack travel in mm : 5.90...6.10 Remarks:

APPLICATION

Generator set

Note remarks

Test sheet : ENA 11,9 g : 09.11.89 Edition : 16.6.88 Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 333

Injection pump

Pump designation: PE6P120A320RS257 EP type number : 0 411 826 075

Governor

Governor design. : RSV250...1100P0A533

: 0 421 833 274 Governer no.

Customer-spec. information Customer : ENASA

: 96 T1A0 Engine

1st version kW : 213.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 10.10...10.20

Del.quantity cm3/: 18.6...18.8

100 s: (18.3...19.1)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 250.0 2nd speed

Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

Del.quantity : 186.0...188.0

1000 : (183.0...191.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testina:

1st rack travel in: 9.10

Speed rpm : 1140...1150 2nd rack travel in: 4.00 rpm : 1170...1200 Speed 3rd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1350 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 15...23 Setting point w/out bumper spring rpm : 250 Speed Rack travel in mm: 5.3 Testina: rpm : 100 Speed Minimum rack trave: 19.50 rpm : 250 Rack travel in mm : 5.70...5.90 Rack travel in mm : 2.00 : 330...390 Speed rpm TORQUE CONTROL Torque control curve – 1st version 1st speed rpm : 1050 Rack travel in m: 10.00...10.20 rpm : 450 2nd speed Rack travel in m: 10.10...10.20 3rd speed rpm : 300 Rack travel in m: 11.30...11.90 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.10 Speed rpm : 1140...1150 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Rack travel in mm : 19.50...21.00 Remarks: APPLICATION Ship

Note remarks

: DAF 11,7 g Test sheet Edition : 09.11.89 : 30.9.88 Replaces : ISO-4113 Test oil

Combination no. : 0 401 876 336

Injection pump

Pump designation : PE6P120A320RS415-1 EP type number : 0 411 826 123

Governor

Governor design. : RSV250...1050P5A539

Governer no. : 0 421 833 299

Customer-spec. information : DAF Customer

Engine : KT 191

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

BASIC SETTING

rpm: 650 1st speed

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 16.1...16.3

100 s: (15.8...16.6)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 250.0 Rack travel in mm: 6.4...6.8 Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8 100 s: (1.2) Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650 Aneroid pressure h: 700

: 161.0...163.0 Del.quantity

1000 : (158.0...166.0)

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version

Control lever

position degrees: 46...54

Testina:

1st rack travel in: 9.20

Speed rpm : 1085...1095

2nd rack travel in: 4.00

rpm : 1125...1155 Speed

3rd rack travel in: 4.00

rpm : 1150...1180 Speed 4th rack travel in: 1320

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 20...28

Setting point w/out bumper spring Speed rpm : 250

Rack travel in mm: 5.8

Testina:

: 100 Speed rpm : 250 Speed rpm

Rack travel in mm : 6.20...6.40 Rack travel in mm : 2.00

: 630...730 **beed**2 rpm

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1040 Rack travel in m: 10.20...10.40

: 650 rpm 2nd speed

Rack travel in m: 11.10...11.20

rpm : 805 3rd speed

Rack travel in m: 10.80...11.00 th speed rpm : 850

4th speed

Rack travel in m: 10.50...10.70

Aneroid/Altitude Compensator Test

1st version Setting

: 600 Speed rpm

Pressure hPa : 700 : 10.80...10.90 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 9.50...9.70 2nd pressure hPa : 310 Rack travel in m: 10.40...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 rpm : 1040 Speed

Del.quantity cm3/: 160.0...164.0 1000 s: (157.0...167.0)

Aneroid pressure h: -

rpm : 600 Speed

Del.quantity cm3/: 130.0...132.0

1000 s: (127.0...135.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.20

rpm : 1085...1095 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 300.0...340.0 1000 s: (296.0...344.0) Rack travel in mm: 19.50...21.00

LOW IDLE

Speed rpm : 250

Rack travel in mm : 6.20...6.40

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

: IFS 23,1 d Test sheet : 15.08.89 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 876 337

Injection pump

Pump designation : PE6P130A320S521 EP type number : 0 411 836 044

Governor

Governor design. : RSV350...1500P0A524

Governer no. : 0 421 833 256

Customer-spec. information Customer : ISOTTA

: ID38 SS-6V Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. .. C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values __

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.50...3.60 Prestroke mm : (3.45...3.65) Rack travel in mm : 18.00...21.00

: 0-45-120-165-240-285 Phasing

Firing order : 1-2-3-4-5-6

Tolerance + - 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1500 1st speed

Rack travel in mm : 13.40...13.50

Del.guantity cm3/: 25.7...26.0

100 s: (25.3...26.3)

cm3 : 0.6Spread

100 s: (1.0)

rpm : 500.0 2nd speed Rack travel in mm: 8.2...8.4 Del.quantity cm3/: 9.6...10.2

100 s: (9.2...10.6) cm3 : 1.0 Spread

100 s: (1.4) rpm : 500 3rd speed Rack travel in mm: 7.80 Del.quantity cm3/: 80.0

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1500 Speed

Aneroid pressure h: 900
Del.quantity : 257.0...260.0
1000 : (253.5...263.5)

: 6.00 cm3 Spread

1000 : (10.00)

RATED SPEED

1st version Control lever

position degrees: 42...50

Testina:

1st rack travel in: 12.40 rpm : 1540...1550 Speed 2nd rack travel in: 4.00 rpm : 1650...1680 Speed 3rd rack travel in: 4.00 rpm : 1665...1695 Speed 4th rack travel in: 1750 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 68...76 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 6.4 rpm : 350 Speed Rack travel in mm : 6.80...7.00 Rack travel in mm : 2.00 Speed rpm : 525...585 TORQUE CONTROL Torque control curve - 1st version rpm : 1500 1st speed Rack travel in m: 13.40...13.50 2nd speed rpm : 600 Rack travel in m: 13.40...13.60 3rd speed rpm : 400 Rack travel in m: 14.60...15.20 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 900 Pressure : 13.40...13.50 Rack travel mm Measurement Speed 1/min: 600 Rack travel in m: 12.40...12.50 2nd pressure hPa : 300 Rack travel in m: 12.80...12.90 FUEL DELIVERY CHARACTERISTICS 1st version : 500 Speed rpm Del.quantity cm3/: 215.0...218.0 1000 s: (211.5...221.5) **BREAKAWAY**

Speed rpm : 1540...1550

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.70...7.10
Del.quantity cm3/ : 20.0...26.0 *
 1000 s: (-)

1000 01

Remarks:

* = Element disconnected at idle for cylinders 2, 4 and 6.

1st version

1mm rack travel less than

full load rack tr: 12.40

Note remarks

Test sheet : ENA 10,1 g : 01.12.89 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 876 339

Injection pump

Pump designation : PE6P110A820LS513-1 : 0 411 816 177

EP type number

Governor : RSV250...1000P1A532-Governor design.

: 0 421 833 331 Governer no.

Customer-spec. information Customer : ENASA

Engine : 95T1B0.MR4

1st version kW : 176.0 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3,20...3.30 Prestroke mm

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance $+ - \frac{1}{2}$: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 18.8...19.0

100 s: (18.5...19.3)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 250.02nd speed Rack travel in mm: 6.6...6.8 Del.quantity cm3/: 1.8...2.2

100 s: (1.5...2.4)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

: 188.0...190.0 Del.quantity 1000 : (185.0...193.0)

: 4.00

Spread cm3 1000 : (7.50)

RATED SPEED

1st version

Control Lever

position degrees: 36...44

Testing:

1st rack travel in: 12.20

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

Speed rpm : 1085...1115 3rd rack travel in: 4.00 rpm : 1085...1115 Speed 4th rack travel in: 1250 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 13...21 Setting point w/out bumper spring : 250 Speed rpm Rack travel in mm: 5.5 Testing: : 100 Speed rpm Minimum rack trave: 19.50 : 250 Speed rpm Rack travel in mm : 5.40...5.60 Rack travel in mm : 2.00 Speed rpm : 330...390 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 13.20...13.30 2nd speed rpm : 450 Rack travel in m: 13.20...13.30 3rd speed rpm : 300 Rack travel in m: 14.40...15.00 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.20 rpm : 1040...1050 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 150.0...170.0 1000 s: (146.0...174.0) Rack travel in mm : 19.00...21.00 LOW IDLE : 250 Speed rom Rack travel in mm : 5.90...6.10 Remarks: **APPLICATION**

IN I CECITIES

Ship

Note remarks

Test sheet : PEN 12,1 b : 11.11.88 Edition : 9.3.87 Replaces : ISO-4113 Test oil

Combination no. : 0 401 876 756

Injection pump

Pump designation : PE6P120A320RS3189 : D 411 826 759 EP type number

Governor

Governor design. : RSV650...750P4/421-3

: 0 421 833 252 Governer no.

Customer—spec. information

Customer : VOLVO-PENTA

Engine : TD121GG

: 199.0 1st version kW Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.60...2.70 : (2.55...2.75) Prestroke mm

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rom: 700 1st speed

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 24.1...24.3

100 s: (23.8...24.6)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 650.0 2nd speed

Rack travel in mm : 3.3...3.5 Del.quantity cm3/ : 2.0...2.4

100 s: (1.7...2.7)

cm3 : 0.5 Spread

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800

Rack travel in mm : 0.30...1.70

Governor spring pre-tension Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 700 Speed

Del.quantity : 241.0...243.0

1000 : (238.0...246.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 10.40

rpm : 750...755 Speed 2nd rack travel in: 4.00 rpm : 791...804 Speed 4th rack travel in: 950

rpm : 0.30...1.70 Speed

LOW IDLE 1 Control Lever

position degrees: 35...43

Setting point w/out bumper spring

rpm : 650 Speed Rack travel in mm: 3.4

Speed rpm : 650
Rack travel in mm : 3.30...3.50
Rack travel in mm : 2.00

rpm : 630...690 Speed

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.40 Speed rpm : 750...755 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 480.0...520.0 Rack travel in mm : 20.00...21.00

Remarks:

Note remarks

Test sheet : ENA 11,9 i Edition : 13.12.89

Replaces : -

Test oil : ISO-4113

Combination no. : 0 401 876 760

Injection pump

Pump designation : PE6P120A320RS3176-1

EP type number : 0 411 826 767

Governor

Governor design. : RSV250...1100P0A533

Governer no. : 0 421 833 274

Customer—spec. information Customer : ENASA

Engine : 96 W1 A0

1st version kW : 250.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _ C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90 : (3.75...3.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 13.60...13.70

Del.quantity cm3/: 24.7...24.9

100 s: (24.4...25.2)

Spread cm3: 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.1...4.3 Del.quantity cm3/: 2.5...3.1

100 s: (2.2...3.4)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

ver position Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1000

Del.quantity : 247.0...249.0

1000 : (244.0...252.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testina:

1st rack travel in: 12.60

rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1200...1230 Speed 3rd rack travel in: 4.00 rpm : 1200...1230 Speed 4th rack travel in: 1350 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 15...23 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 5.5 Testing: Speed rpm : 100 Minimum rack trave: 19.50 : 250 Speed rpm Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 : 340...400 Speed rpm TORQUE CONTROL Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 13.60...13.70 2nd speed rpm : 450 Rack travel in m: 13.60...13.70 3rd speed rpm : 300 Rack travel in m: 14.80...15.40 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.60 rpm : 1140...1150 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 150.0...170.0 1000 s: (146.0...174.0) Rack travel in mm : 19.50...21.00 Remarks: Delivery-valve spring pre-tension 3.2...3.4 mm. Permissible alteration of 3.0...3.5 mm **APPLICATION**

y

Ship